216267

STATE OF SOUTH CAROLINA)
)

BEFORE THE
PUBLIC SERVICE COMMISSION
OF SOUTH CAROLINA

(Caption of Case)

IN RE: Application of Duke Power Company for an Increase in Electric Rates and Charges)

COVER SHEET

DOCKET NUMBER: 1991 - 216 - E

(Please type or print)

Submitted by: Catherine E. Heigel **SC Bar Number:** 9268

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DOCKETING INFORMATION (Check all that apply)

☐ **Emergency Relief demanded in petition**

☐ **Request for item to be placed on Commission's Agenda expeditiously**

☐ **Other:**

INDUSTRY (Check one)

- ☒ Electric
- ☐ Electric/Gas
- ☐ Electric/Telecommunications
- ☐ Electric/Water
- ☐ Electric/Water/Telecom.
- ☐ Electric/Water/Sewer
- ☐ Gas
- ☐ Railroad
- ☐ Sewer
- ☐ Telecommunications
- ☐ Transportation
- ☐ Water
- ☐ Water/Sewer
- ☐ Administrative Matter
- ☐ Other:

NATURE OF ACTION (Check all that apply)

- ☐ Affidavit
- ☐ Agreement
- ☐ Answer
- ☐ Appellate Review
- ☐ Application
- ☐ Brief
- ☐ Certificate
- ☐ Comments
- ☐ Complaint
- ☐ Consent Order
- ☐ Discovery
- ☐ Exhibit
- ☐ Expedited Consideration
- ☐ Interconnection Agreement
- ☐ Interconnection Amendment
- ☐ Late-Filed Exhibit
- ☐ Letter
- ☐ Memorandum
- ☐ Motion
- ☐ Objection
- ☐ Petition
- ☐ Petition for Reconsideration
- ☐ Petition for Rulemaking
- ☐ Petition for Rule to Show Cause
- ☐ Petition to Intervene
- ☐ Petition to Intervene Out of Time
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- ☐ Publisher's Affidavit
- ☒ Report
- ☐ Request
- ☐ Request for Certification
- ☐ Request for Investigation
- ☐ Resale Agreement
- ☐ Resale Amendment
- ☐ Reservation Letter
- ☐ Response
- ☐ Response to Discovery
- ☐ Return to Petition
- ☐ Stipulation
- ☐ Subpoena
- ☐ Tariff
- ☐ Other:

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OFFICE OF THE GENERAL COUNSEL

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April 9, 2009

The Honorable Charles Terreni
Administrator and Chief Clerk
Public Service Commission of South Carolina
Post Office Drawer 11649
Columbia, South Carolina 29211

Re: Docket No. 1991-216-E
Nuclear Decommissioning Cost Studies

Dear Mr. Terreni:

In Order No. 91-1022 in Docket No. 91-216-E (Duke Energy Carolinas, LLC's most recent general rate proceeding), this Commission approved the recovery by Duke Energy Carolinas, LLC (the "Company") of funding requirements for the decommissioning of its nuclear power plants. Since 2004, the Company has held all of its decommissioning funds in external trust funds as described to this Commission in prior filings in this docket. The Company has submitted periodic reports to the Commission as required by Order No. 91-1022 that provided updates on decommissioning cost studies and the status of the funds. The Company recently retained TLG Services, Inc. to conduct updated site-specific decommissioning studies of the Company's seven nuclear units located at the Oconee, McGuire, and Catawba Nuclear Stations. These studies were completed and approved by the Company on January 13, 2009. The Company encloses one original and one copy of the studies for the Commission's information. Duke Energy Carolinas is not requesting any action by the Commission at this time.

Sincerely,

Catherine E. Heigel

Catherine E. Heigel

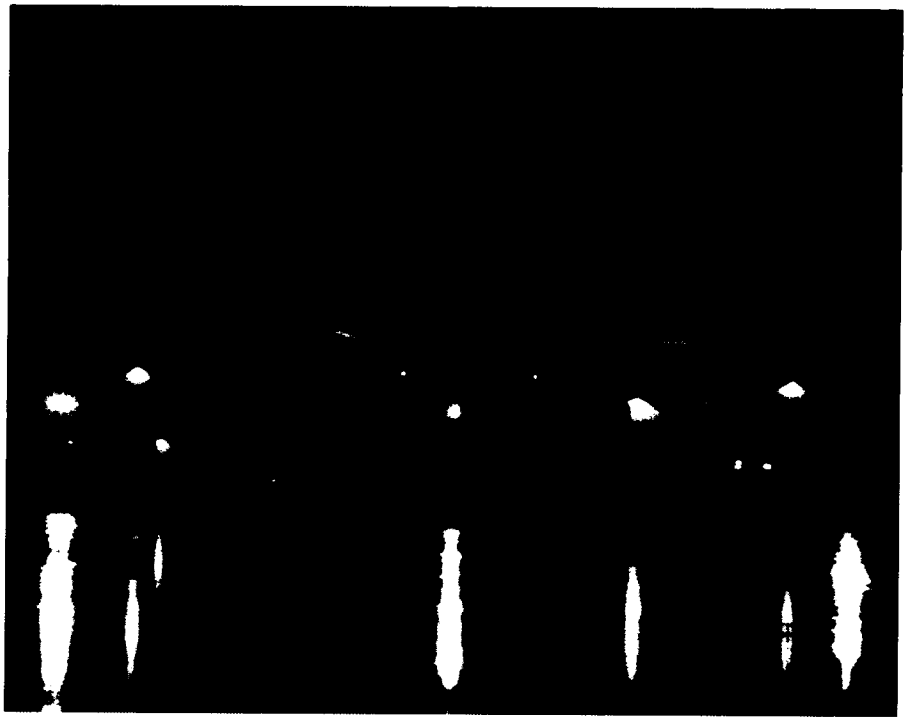
Enclosures

cc: Dan Arnett, ORS
Jeff Nelson, ORS

DECOMMISSIONING COST ANALYSIS

for the

McGUIRE NUCLEAR STATION



prepared for

Duke Energy Corporation

prepared by

TLG Services, Inc.
Bridgewater, Connecticut

December 2008

APPROVALS

Project Manager	William A. Cloutier, Jr.	12/16/2008 Date
Project Engineer	Thomas J. Garrett	12/16/08 Date
Technical Manager	Francis W. Seymore	12/16/08 Date
Quality Assurance Manager	Joseph J. Adler	12/17/08 Date

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0		12-17-08		Original Issue

EXECUTIVE SUMMARY

This report presents estimates of the cost to decommission the McGuire Nuclear Station (McGuire) for the selected decommissioning scenarios following the scheduled cessation of plant operations. The analysis relies upon site-specific, technical information from an evaluation prepared in 2003,[1] updated to reflect current assumptions pertaining to the disposition of the nuclear plant and relevant industry experience in undertaking such projects. The current estimates are designed to provide Duke Energy Corporation, (Duke Energy) with sufficient information to assess the plant owners' financial obligations, as they pertain to the eventual decommissioning of the nuclear plant.

The primary goal of the decommissioning is the removal and disposal of the contaminated systems and structures so that the plant's operating licenses can be terminated. The analysis recognizes that spent fuel will be stored at the site in the plant's storage pools and/or in an independent spent fuel storage installation (ISFSI) until such time that it can be transferred to the U.S. Department of Energy (DOE). Consequently, the estimates also include those costs to manage and subsequently decommission these interim storage facilities.

The currently projected cost to decommission the station, assuming the DECON alternative, is estimated at $1,187.2 million, as reported in 2008 dollars. An estimate for the SAFSTOR alternative is also provided.

The estimates are based on numerous fundamental assumptions, including regulatory requirements, project contingencies, low-level radioactive waste disposal practices, high-level radioactive waste management options, and site restoration requirements. The estimates incorporate a minimum cooling period for the spent fuel that resides in the storage pools when operations cease. Once sufficiently cooled, the spent fuel is transferred to the DOE, along with the spent fuel stored at the ISFSI during plant operations. The estimates also include the dismantling of site structures and non-essential facilities and the limited restoration of the site.

Alternatives and Regulations

The ultimate objective of the decommissioning process is to reduce the inventory of contaminated and activated material so that the license can be terminated. The Nuclear Regulatory Commission (NRC or Commission) provided initial decommissioning requirements in its rule adopted on June 27, 1988.[2] In this rule, the

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1 "Decommissioning Cost Analysis for the McGuire Nuclear Station," Document No. D03-1478-003, Rev. 0, TLG Services, Inc., November 2003

2 U.S. Code of Federal Regulations, Title 10, Parts 30, 40, 50, 51, 70 and 72 "General Requirements for

NRC set forth financial criteria for decommissioning licensed nuclear power facilities. The regulations addressed planning needs, timing, funding methods, and environmental review requirements for decommissioning. The rule also defined three decommissioning alternatives as being acceptable to the NRC: DECON, SAFSTOR, and ENTOMB.

> DECON is defined as "the alternative in which the equipment, structures, and portions of a facility and site containing radioactive contaminants are removed or decontaminated to a level that permits the property to be released for unrestricted use shortly after cessation of operations."[3]
>
> SAFSTOR is defined as "the alternative in which the nuclear facility is placed and maintained in a condition that allows the nuclear facility to be safely stored and subsequently decontaminated (deferred decontamination) to levels that permit release for unrestricted use."[4] Decommissioning is to be completed within 60 years, although longer time periods will be considered when necessary to protect public health and safety.
>
> ENTOMB is defined as "the alternative in which radioactive contaminants are encased in a structurally long-lived material, such as concrete; the entombed structure is appropriately maintained and continued surveillance is carried out until the radioactive material decays to a level permitting unrestricted release of the property."[5] As with the SAFSTOR alternative, decommissioning is currently required to be completed within 60 years.
>
> The 60-year restriction has limited the practicality for the ENTOMB alternative at commercial reactors that generate significant amounts of long-lived radioactive material. In 1997, the Commission directed its staff to re-evaluate this alternative and identify the technical requirements and regulatory actions that would be necessary for entombment to become a viable option. The resulting evaluation provided several recommendations, however, rulemaking has been deferred pending the completion of additional research studies, for example, on engineered barriers.

Decommissioning Nuclear Facilities," Nuclear Regulatory Commission, Federal Register Volume 53, Number 123 (p 24018 et seq.), June 27, 1988

3 Ibid. Page FR24022, Column 3

4 Ibid.

5 Ibid. Page FR24023, Column 2

In 1996, the NRC published revisions to the general requirements for decommissioning nuclear power plants to clarify ambiguities and codify procedures and terminology as a means of enhancing efficiency and uniformity in the decommissioning process.[6] The amendments allow for greater public participation and better define the transition process from operations to decommissioning. Regulatory Guide 1.184, issued in July 2000, further described the methods and procedures acceptable to the NRC staff for implementing the requirements of the 1996 revised rule relating to the initial activities and major phases of the decommissioning process. The costs and schedules presented in this analysis follow the general guidance and processes described in the amended regulations. The format and content of the estimates is also consistent with the recommendations of Regulatory Guide 1.202, issued in February 2005.[7]

Methodology

The methodology used to develop the estimates described within this document follows the basic approach originally presented in the cost estimating guidelines[8] developed by the Atomic Industrial Forum (now Nuclear Energy Institute). This reference describes a unit factor method for determining decommissioning activity costs. The unit factors used in this analysis incorporate site-specific costs and the latest available information on worker productivity in decommissioning.

The estimates also reflect lessons learned from TLG's involvement in the Shippingport Station decommissioning, completed in 1989, and the decommissioning of the Cintichem reactor, hot cells and associated facilities, completed in 1997. In addition, the planning and engineering for the Pathfinder, Shoreham, Rancho Seco, Trojan, Yankee Rowe, Big Rock Point, Maine Yankee, Humboldt Bay-3, Connecticut Yankee and San Onofre-1 nuclear units have provided additional insight into the process, the regulatory aspects, and technical challenges of decommissioning commercial nuclear units.

An activity duration critical path is used to determine the total decommissioning program schedule. The schedule is relied upon in calculating the carrying costs, which include program management, administration, field engineering, equipment rental, and support services, such as quality control and security.

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6 U.S. Code of Federal Regulations, Title 10, Parts 2, 50, and 51, "Decommissioning of Nuclear Power Reactors," Nuclear Regulatory Commission, Federal Register Volume 61, (p 39278 et seq.), July 29, 1996

7 "Standard Format and Content of Decommissioning Cost Estimates for Nuclear Power Reactors," Regulatory Guide 1.202, U.S. Nuclear Regulatory Commission, February 2005

8 T.S. LaGuardia et al., "Guidelines for Producing Commercial Nuclear Power Plant Decommissioning Cost Estimates," AIF/NESP-036, May 1986

Contingency

Consistent with cost estimating practice, contingencies are applied to the decontamination and dismantling costs developed as "specific provision for unforeseeable elements of cost within the defined project scope, particularly important where previous experience relating estimates and actual costs has shown that unforeseeable events which will increase costs are likely to occur."[9] The cost elements in the estimates are based on ideal conditions; therefore, the types of unforeseeable events that are almost certain to occur in decommissioning, based on industry experience, are addressed through a percentage contingency applied on a line-item basis. This contingency factor is a nearly universal element in all large-scale construction and demolition projects. It should be noted that contingency, as used in this analysis, does not account for price escalation and inflation in the cost of decommissioning over the remaining operating life of the station.

Contingency funds are expected to be fully expended throughout the program. As such, inclusion of contingency is necessary to provide assurance that sufficient funding will be available to accomplish the intended tasks.

Low-Level Radioactive Waste Disposal

The contaminated and activated material generated in the decontamination and dismantling of a commercial nuclear reactor is classified as low-level (radioactive) waste, although not all of the material is suitable for "shallow-land" disposal. With the passage of the "Low-Level Radioactive Waste Policy Act" in 1980,[10] and its Amendments of 1985,[11] the states became ultimately responsible for the disposition of low-level radioactive waste generated within their own borders.

Until recently, there were two facilities available to Duke Energy for the disposal of low-level radioactive waste generated by McGuire. As of July 1, 2008, however, the facility in Barnwell, South Carolina was closed to generators outside the Atlantic Compact (comprised of the states of Connecticut, New Jersey and South Carolina). This leaves the facility in Clive, Utah, operated by EnergySolutions, as the only available destination for low-level radioactive waste requiring controlled disposal.

For the purpose of this analysis, the EnergySolutions' facility is used as the basis for estimating the disposal cost for the majority of the radioactive waste (Class A [12]).

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9 Project and Cost Engineers' Handbook, Second Edition, American Association of Cost Engineers, Marcel Dekker, Inc., New York, New York, p. 239.
10 "Low-Level Radioactive Waste Policy Act of 1980," Public Law 96-573, 1980.
11 "Low-Level Radioactive Waste Policy Amendments Act of 1985," Public Law 99-240, 1986.
12 U.S. Code of Federal Regulations, Title 10, Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste"

EnergySolutions does not have a license to dispose of the more highly radioactive waste (Classes B and C), for example, generated in the dismantling of the reactor vessel. As a proxy, the disposal cost for this material is based upon the last published rate schedule for non-compact waste for the Barnwell facility.

The dismantling of the components residing closest to the reactor core generates radioactive waste considered unsuitable for shallow-land disposal (i.e., low-level radioactive waste with concentrations of radionuclides that exceed the limits established by the NRC for Class C radioactive waste (GTCC)). The Low-Level Radioactive Waste Policy Amendments Act of 1985 assigned the federal government the responsibility for the disposal of this material. The Act also stated that the beneficiaries of the activities resulting in the generation of such radioactive waste bear all reasonable costs of disposing of such waste. However, to date, the federal government has not identified a cost for disposing of GTCC or a schedule for acceptance. As such, the GTCC radioactive waste has been packaged and disposed of as high-level waste, at a cost equivalent to that envisioned for the spent fuel.

For purposes of this study, GTCC is packaged in the same canisters used for spent fuel. The GTCC material is either stored with the spent fuel at the ISFSI or shipped directly to a DOE facility as it is generated (depending upon the timing of the decommissioning and whether the spent fuel has been removed from the site prior to the start of decommissioning).

A significant portion of the waste material generated during decommissioning may only be potentially contaminated by radioactive materials. This waste can be analyzed on site or shipped off site to licensed facilities for further analysis, for processing and/or for conditioning/recovery. Reduction in the volume of low-level radioactive waste requiring disposal in a licensed low-level radioactive waste disposal facility can be accomplished through a variety of methods, including analyses and surveys or decontamination to eliminate the portion of waste that does not require disposal as radioactive waste, compaction, incineration or metal melt. The estimates for McGuire reflect the savings from waste recovery/volume reduction.

High-Level Radioactive Waste Management

Congress passed the "Nuclear Waste Policy Act"[13] (NWPA) in 1982, assigning the federal government's long-standing responsibility for disposal of the spent nuclear fuel created by the commercial nuclear generating plants to the DOE. The NWPA provided that DOE would enter into contracts with utilities in which DOE would promise to take the utilities' spent fuel and high-level radioactive waste and utilities would pay

13 "Nuclear Waste Policy Act of 1982 and Amendments," DOE's Office of Civilian Radioactive Management, 1982

the cost of the disposition services for that material. The NWPA, along with the individual contracts with the utilities, specified that the DOE was to begin accepting spent fuel by January 31, 1998.

Since the original legislation, the DOE has announced several delays in the program schedule. By January 1998, the DOE had failed to accept any spent fuel or high level waste, as required by the NWPA and utility contracts. Delays continue and, as a result, generators have initiated legal action against the DOE in an attempt to obtain compensation for DOE's breach of contract.

Operation of DOE's yet-to-be constructed repository is contingent upon the review and approval of the facility's license application by the NRC and the successful resolution of pending litigation. The DOE submitted its license application to the NRC on June 3, 2008, seeking authorization to construct the repository at Yucca Mountain, Nevada. Assuming a timely review and adequate funding, the DOE expects that receipt of fuel could begin as early as 2017,[14] although 2020 may be more likely according to the director of the DOE's waste program.[15]

It is generally necessary that spent fuel be cooled and stored for a minimum period at the generating site prior to transfer. As such, the NRC requires that licensees establish a program to manage and provide funding for the management of all irradiated fuel at the reactor site until title of the fuel is transferred to the Secretary of Energy, pursuant to 10 CFR Part 50.54(bb).[16] This funding requirement is fulfilled through inclusion of certain cost elements in the decommissioning estimates, for example, associated with the isolation and continued operation of the spent fuel pools and the ISFSI.

According to the spent fuel management plan, at shutdown the spent fuel pools are expected to contain freshly discharged assemblies (from the most recent refueling cycles) as well as the final reactor core. Over the following thirteen years the assemblies are packaged into multipurpose canisters for transfer to the DOE. It is assumed that this period provides the necessary cooling for the final core to meet the transport requirements for decay heat.

DOE's contracts with utilities order the acceptance of spent fuel from utilities based upon the oldest fuel receiving the highest priority. For purposes of this analysis, acceptance of commercial spent fuel by the DOE is expected to begin in 2017 (in

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14 "DOE Announces Yucca Mountain License Application Schedule", U.S. Department of Energy's Office of Public Affairs, Press Release July 19, 2006

15 "Testimony of Edward Sproat", Director, Office of Civilian Radioactive Waste Management, before a U.S. House of Representatives subcommittee on the status of Yucca Mountain, July 15, 2008.

16 U.S. Code of Federal Regulations, Title 10, Part 50, "Domestic Licensing of Production and Utilization Facilities," Subpart 54 (bb), "Conditions of Licenses."

accordance with DOE's latest published schedule). The first assemblies removed from the McGuire site are assumed to be in 2020. With an estimated, maximum rate of transfer of 3,000 metric tons of uranium (MTU)/year, completion of the removal of fuel from the site is projected to be in the year 2061. Consequently, costs are included within the estimates for the long-term caretaking of the spent fuel at the McGuire site until the year 2061.

An ISFSI, which can be operated under a separate and independent license, has been constructed to support continued plant operations. The facility is not required to support future decommissioning operations, however, there will be spent fuel located at the ISFSI (from plant operations) that will need to be transferred to the DOE during decommissioning. This fuel is assumed to be transferred after the pools are emptied.

Duke Energy's position is that the DOE has a contractual obligation to accept McGuire's fuel earlier than the projections set out above consistent with its contract commitments. No assumption made in this study should be interpreted to be inconsistent with this claim. However, at this time, including the cost of storing spent fuel in this study is the most reasonable approach because it insures the availability of sufficient decommissioning funds at the end of the station's life if, contrary to its contractual obligation, the DOE has not performed earlier.

Site Restoration

The efficient removal of the contaminated materials at the site may result in damage to many of the site structures. Blasting, coring, drilling, and the other decontamination activities will substantially damage power block structures, potentially weakening the footings and structural supports. Prompt dismantling of site structures (once the facilities are decontaminated) is clearly the most appropriate and cost-effective option. It is unreasonable to anticipate that these structures would be repaired and preserved after the radiological contamination is removed. The cost to dismantle site structures with a work force already mobilized on site is more efficient than if the process is deferred. Site facilities quickly degrade without maintenance, adding additional expense and creating potential hazards to the public and the demolition work force. Consequently, this study assumes that site structures are removed to a nominal depth of three feet below the local grade level wherever possible. The site is then to be graded and stabilized.

Summary

The costs to decommission McGuire assumes the removal of all contaminated and activated plant components and structural materials such that the owner may then have unrestricted use of the site with no further requirements for an operating license.

Low-level radioactive waste, other than GTCC waste, is sent to a commercial processor for treatment/conditioning or to a controlled disposal facility.

Decommissioning is accomplished within the 60-year period required by current NRC regulations. In the interim, the spent fuel remains in storage at the site until such time that the transfer to a DOE facility is complete. Once emptied, the storage facilities are also decommissioned.

Both the DECON and SAFSTOR scenarios are described in Section 2. The assumptions are presented in Section 3, along with schedules of annual expenditures. The major cost contributors are identified in Section 6, with detailed activity costs, waste volumes, and associated manpower requirements delineated in Appendices C and D. The major cost components are also identified in the cost summary provided at the end of this section.

The cost elements in the estimates are assigned to one of three subcategories: NRC License Termination, Spent Fuel Management, and Site Restoration. The subcategory "NRC License Termination" is used to accumulate costs that are consistent with "decommissioning" as defined by the NRC in its financial assurance regulations (i.e., 10 CFR Part 50.75). The cost reported for this subcategory is generally sufficient to terminate the unit's operating license, recognizing that there may be some additional cost impact from spent fuel management.

The "Spent Fuel Management" subcategory contains costs associated with the containerization and transfer of spent fuel from the wet storage pools to a DOE transport cask, as well as the transfer the fuel in storage at the ISFSI to the DOE. Costs are included for the operation of the storage pools and the management of the ISFSI until such time that the transfer is complete.

"Site Restoration" is used to capture costs associated with the dismantling and demolition of buildings and facilities demonstrated to be free from contamination. This includes structures never exposed to radioactive materials, as well as those facilities that have been decontaminated to appropriate levels. Structures are removed to a depth of three feet and backfilled to conform to local grade.

It should be noted that the costs assigned to these subcategories are allocations. Delegation of cost elements is for the purposes of comparison (e.g., with NRC financial guidelines) or to permit specific financial treatment (e.g., ARO determinations). In reality, there can be considerable interaction between the activities in the three subcategories. For example, an owner may decide to remove non-contaminated structures early in the project to improve access to highly contaminated facilities or plant components. In these instances, the non-contaminated removal costs could be reassigned from Site Restoration to an NRC License Termination support activity.

However, in general, the allocations represent a reasonable accounting of those costs that can be expected to be incurred for the specific subcomponents of the total estimated program cost, if executed as described.

As noted within this document, the estimates were developed and costs are presented in 2008 dollars. As such, the estimates do not reflect the escalation of costs (due to inflationary and market forces) over the remaining operating life of the plant or during the decommissioning period.

DECON COST SUMMARY
DECOMMISSIONING COST ELEMENTS
(thousands of 2008 dollars)

Cost Element	Unit 1	Unit 2	Total
Decontamination	13,001	12,415	25,416
Removal	86,144	115,713	201,857
Packaging	17,274	17,357	34,631
Transportation	11,397	11,512	22,909
Waste Disposal	59,302	59,696	118,997
Off-site Waste Processing	23,292	26,378	49,670
Program Management [1]	233,677	254,867	488,545
Utility Site Indirect	20,742	22,539	43,281
Spent Fuel Pool Isolation	10,819	7,212	18,031
Spent Fuel Management [2]	29,402	34,245	63,647
Insurance and Regulatory Fees	17,178	15,867	33,045
Energy	14,008	13,900	27,908
Characterization and Licensing Surveys	15,353	14,350	29,702
Property Taxes	6,944	7,368	14,312
Miscellaneous Equipment	6,515	6,515	13,030
Miscellaneous Site Services	0	2,211	2,211
Total [3]	565,046	622,146	1,187,192

Cost Element			
License Termination	428,787	447,859	876,647
Spent Fuel Management	109,380	126,079	235,459
Site Restoration	26,879	48,207	75,086
Total [3]	565,046	622,146	1,187,192

[1] Includes engineering and security costs
[2] Excludes program management costs (staffing) but includes costs for spent fuel loading/transfer/spent fuel pool O&M and EP fees
[3] Columns may not add due to rounding

SAFSTOR COST SUMMARY
DECOMMISSIONING COST ELEMENTS
(thousands of 2008 dollars)

Cost Element	Unit 1	Unit 2	Total
Decontamination	10,287	11,396	21,683
Removal	84,675	112,644	197,320
Packaging	13,309	13,428	26,737
Transportation	8,583	9,122	17,705
Waste Disposal	43,533	44,351	87,883
Off-site Waste Processing	25,222	28,211	53,433
Program Management [1]	343,965	253,548	597,513
Utility Site Indirect	28,830	19,998	48,828
Spent Fuel Pool Isolation	10,819	7,212	18,031
Spent Fuel Management [2]	29,893	31,537	61,431
Insurance and Regulatory Fees	44,775	41,845	86,619
Energy	22,728	21,518	44,246
Characterization and Licensing Surveys	16,804	15,801	32,604
Property Taxes	7,017	7,436	14,453
Miscellaneous Equipment	16,331	18,293	34,624
Miscellaneous Site Services		2,211	2,211
Total [3]	706,770	638,550	1,345,320

Cost Element			
License Termination	543,896	496,307	1,040,203
Spent Fuel Management [4]	126,981	85,929	212,910
Site Restoration	35,893	56,314	92,207
Total [3]	706,770	638,550	1,345,320

[1] Includes engineering and security costs
[2] Direct costs only, excludes program management costs (staffing) but includes costs for spent fuel loading/transfer/spent fuel pool O&M and EP fees
[3] Columns may not add due to rounding
[4] Includes percentage of Period 2a (dormancy) plant operating costs until spent fuel pools are emptied, in addition to the direct costs

1. INTRODUCTION

This report presents estimates of the costs to decommission the McGuire Nuclear Station, (McGuire) following a scheduled cessation of plant operations. The analysis relies upon site-specific, technical information from an earlier evaluation prepared in 2003,[1]* updated to reflect current assumptions pertaining to the disposition of the nuclear plant and relevant industry experience in undertaking such projects. The current estimates are designed to provide Duke Energy Corporation (Duke Energy) with sufficient information to assess the plant owners' financial obligations, as they pertain to the eventual decommissioning of the nuclear station. It is not a detailed engineering document, but a financial analysis prepared in advance of the detailed engineering that will be required to carry out the decommissioning.

1.1 OBJECTIVES OF STUDY

The objectives of this study are to prepare comprehensive estimates of the costs to decommission McGuire, to provide a sequence or schedule for the associated activities, and to develop waste stream projections from the decontamination and dismantling activities. For the purposes of this study, the shutdown dates for the station are assumed to be June 12, 2041 and March 3, 2043 for Units 1 and 2, respectively, based upon the current operating licenses.

1.2 SITE DESCRIPTION

McGuire is located in Mecklenburg County, North Carolina, approximately 17 miles north-northwest of Charlotte, North Carolina on the shore of Lake Norman. The station is comprised of two nuclear units that are essentially identical except for certain auxiliary systems. Lake Norman, created with the construction of the Cowans Ford Dam, provides both the power source for the Cowans Ford Hydroelectric Station, west of the McGuire Station, as well as the heat sink for the nuclear units.

The Nuclear Steam Supply System (NSSS) consists of a pressurized water reactor and four-loop reactor coolant system. Each generating unit has a reference core design of 3411 megawatts (thermal) with a corresponding net electrical rating of 1129 megawatts (electric), with the reactor at rated power.

The reactor coolant system is comprised of the reactor vessel and four heat transfer loops, each containing a vertical U-tube type steam generator, and a single speed centrifugal reactor coolant pump. In addition, the system includes

* References provided in Section 7 of the document

an electrically heated pressurizer, a pressurizer relief tank, and interconnected piping. The system is housed within a containment vessel, a free-standing cylindrical steel structure enclosed by a separate reinforced concrete reactor building. The reactor building houses the containment vessel and is designed to provide biological shielding as well as missile protection for the steel containment vessel. A five-foot annulus space is provided between the containment vessel and reactor building for control of containment external temperatures and pressures and also provides a controlled air volume for filtering and access to penetrations for testing and inspection. The containment shell is anchored to the reactor building foundation with a steel liner plate encased in concrete forming the base of the containment.

Heat produced in the reactor is converted to electrical energy by the steam and power conversion system. A turbine-generator system converts the thermal energy of steam produced in the steam generators into mechanical shaft power and then into electrical energy. The turbine generators consist of a tandem (single shaft) arrangement of a double-flow high-pressure turbine and three identical double-flow, low-pressure turbines driving a direct-coupled generator at 1800 rpm. The turbines are operated in a closed feedwater cycle, which condenses the steam. The heated feedwater is returned to the steam generators.

The condenser circulating water system removes heat rejected in the main condensers. The heat is dissipated to Lake Norman. A low-level intake cooling waste system provides cool water from the lower levels of Lake Norman for mixing with the warmer water during times of high lake water temperatures.

1.3 REGULATORY GUIDANCE

The Nuclear Regulatory Commission (NRC or Commission) provided initial decommissioning requirements in its rule "General Requirements for Decommissioning Nuclear Facilities," issued in June 1988.[2] This rule set forth financial criteria for decommissioning licensed nuclear power facilities. The regulation addressed decommissioning planning needs, timing, funding methods, and environmental review requirements. The intent of the rule was to ensure that decommissioning would be accomplished in a safe and timely manner and that adequate funds would be available for this purpose. Subsequent to the rule, the NRC issued Regulatory Guide 1.159, "Assuring the Availability of Funds for Decommissioning Nuclear Reactors,"[3] which provided additional guidance to the licensees of nuclear facilities on the financial methods acceptable to the NRC staff for complying with the requirements of the rule. The regulatory guide addressed the funding

requirements and provided guidance on the content and form of the financial assurance mechanisms indicated in the rule.

The rule defined three decommissioning alternatives as being acceptable to the NRC: DECON, SAFSTOR, and ENTOMB. The DECON alternative assumes that any contaminated or activated portion of the plant's systems, structures and facilities are removed or decontaminated to levels that permit the site to be released for unrestricted use shortly after the cessation of plant operations. The rule also placed limits on the time allowed to complete the decommissioning process. For SAFSTOR, the process is restricted in overall duration to 60 years, unless it can be shown that a longer duration is necessary to protect public health and safety. The guidelines for ENTOMB are similar, providing the NRC with both sufficient leverage and flexibility to ensure that these deferred options are only used in situations where it is reasonable and consistent with the definition of decommissioning. At the conclusion of a 60-year dormancy period (or longer for ENTOMB if the NRC approves such a case), the site would still require significant remediation to meet the unrestricted release limits for license termination.

The ENTOMB alternative has not been viewed as a viable option for power reactors due to the significant time required to isolate the long-lived radionuclides for decay to permissible levels. However, with rulemaking permitting the controlled release of a site,[4] the NRC has re-evaluated this alternative. The resulting feasibility study, based upon an assessment by Pacific Northwest National Laboratory, concluded that the method did have conditional merit for some, if not most reactors. However, the staff also found that additional rulemaking would be needed before this option could be treated as a generic alternative. The NRC had considered rulemaking to alter the 60-year time for completing decommissioning and to clarify the use of engineered barriers for reactor entombments.[5] However, the NRC's staff has recommended that rulemaking be deferred, based upon several factors, e.g., no licensee has committed to pursuing the entombment option, the unresolved issues associated with the disposition of greater-than-Class C material (GTCC), and the NRC's current priorities, at least until after the additional research studies are complete. The Commission concurred with the staff's recommendation.

In 1996, the NRC published revisions to the general requirements for decommissioning nuclear power plants.[6] When the decommissioning regulations were adopted in 1988, it was assumed that the majority of licensees would decommission at the end of the facility's operating licensed life. Since that time, several licensees permanently and prematurely ceased operations. Exemptions from certain operating requirements were required

once the reactor was defueled to facilitate the decommissioning. Each case was handled individually, without clearly defined generic requirements. The NRC amended the decommissioning regulations in 1996 to clarify ambiguities and codify procedures and terminology as a means of enhancing efficiency and uniformity in the decommissioning process. The amendments allow for greater public participation and better define the transition process from operations to decommissioning.

Under the revised regulations, licensees will submit written certification to the NRC within 30 days after the decision to cease operations. Certification will also be required once the fuel is permanently removed from the reactor vessel. Submittal of these notices will entitle the licensee to a fee reduction and eliminate the obligation to follow certain requirements needed only during operation of the reactor. Within two years of submitting notice of permanent cessation of operations, the licensee is required to submit a Post-Shutdown Decommissioning Activities Report (PSDAR) to the NRC. The PSDAR describes the planned decommissioning activities, the associated sequence and schedule, and an estimate of expected costs. Prior to completing decommissioning, the licensee is required to submit an application to the NRC to terminate the license, which will include a license termination plan (LTP).

1.3.1 Nuclear Waste Policy Act

Congress passed the "Nuclear Waste Policy Act"[7] (NWPA) in 1982, assigning the federal government's long-standing responsibility for disposal of the spent nuclear fuel created by the commercial nuclear generating plants to the DOE. The NWPA provided that DOE would enter into contracts with utilities in which DOE would promise to take the utilities' spent fuel and high-level radioactive waste and utilities would pay the cost of the disposition services for that material. The NWPA, along with the individual contracts with the utilities, specified that the DOE was to begin accepting spent fuel by January 31, 1998.

Since the original legislation, the DOE has announced several delays in the program schedule. By January 1998, the DOE had failed to accept any spent fuel or high level waste, as required by the NWPA and utility contracts. Delays continue and, as a result, generators have initiated legal action against the DOE in an attempt to obtain compensation for DOE's breach of contract.

Operation of DOE's yet-to-be constructed repository is contingent upon the review and approval of the facility's license application by the NRC and the successful resolution of pending litigation. The DOE submitted

its license application to the NRC on June 3, 2008, seeking authorization to construct the repository at Yucca Mountain, Nevada. Assuming a timely review, and adequate funding, the DOE expects that receipt of fuel could begin as early as 2017.[8]

It is generally necessary that spent fuel be actively cooled and stored for a minimum period at the generating site prior to transfer. As such, the NRC requires that licensees establish a program to manage and provide funding for the management of all irradiated fuel at the reactor site until title of the fuel is transferred to the Secretary of Energy, pursuant to 10 CFR Part 50.54(bb).[9] This funding requirement is fulfilled through inclusion of certain cost elements in the decommissioning estimate, for example, associated with the isolation and continued operation of the spent fuel pools and ISFSI.

According to the spent fuel management plan, at shutdown the spent fuel pools are expected to contain freshly discharged assemblies (from the most recent refueling cycles) as well as the final reactor core. Over the following thirteen years the assemblies are packaged into multipurpose canisters for transfer to the DOE. It is assumed that this period provides the necessary cooling for the final core to meet the transport requirements for decay heat.

DOE's contracts with utilities order the acceptance of spent fuel from utilities based upon the oldest fuel receiving the highest priority. For purposes of this analysis, acceptance of commercial spent fuel by the DOE is expected to begin in 2017 (in accordance with DOE's latest published schedule). The first assemblies removed from the McGuire site are assumed to be in 2020. With an estimated maximum rate of transfer of 3,000 metric tons of uranium (MTU)/year from the commercial generators, completion of the removal of fuel from the McGuire site is projected to be in the year 2061. Consequently, costs are included within the estimates for the long-term caretaking of the spent fuel at the McGuire site until the year 2061.

An ISFSI, which can be operated under a separate and independent license, has been constructed to support continued plant operations. The facility is not required to support future decommissioning operations, however, there will be spent fuel located at the ISFSI (from plant operations) that will need to be transferred to the DOE during decommissioning. This fuel is assumed to be transferred after the pools are emptied.

Duke Energy's position is that the DOE has a contractual obligation to accept McGuire's fuel earlier than the projections set out above consistent with its contract commitments. No assumption made in this study should be interpreted to be inconsistent with this claim. However, at this time, including the cost of storing spent fuel in this study is the most reasonable approach because it insures the availability of sufficient decommissioning funds at the end of the station's life if, contrary to its contractual obligation, the DOE has not performed earlier.

1.3.2 Low-Level Radioactive Waste Acts

The contaminated and activated material generated in the decontamination and dismantling of a commercial nuclear reactor is classified as low-level (radioactive) waste, although not all of the material is suitable for "shallow-land" disposal. With the passage of the "Low-Level Radioactive Waste Policy Act" in 1980,[10] and its Amendments of 1985,[11] the states became ultimately responsible for the disposition of low-level radioactive waste generated within their own borders.

Until recently, there were two facilities available to Duke Energy for the disposal of low-level radioactive waste generated by McGuire. As of July 1, 2008, however, the facility in Barnwell, South Carolina was closed to generators outside the Atlantic Compact (comprised of the states of Connecticut, New Jersey and South Carolina). This leaves the facility in Clive, Utah, operated by EnergySolutions, as the only available destination for low-level radioactive waste requiring controlled disposal.

For the purpose of this analysis, the EnergySolutions' facility is used as the basis for estimating the disposal cost for the lowest level and majority of the radioactive waste (Class A [12]). EnergySolutions does not have a license to dispose of the more highly radioactive waste (Classes B and C), for example, generated in the dismantling of the reactor vessel. As a proxy, the disposal cost for this material is based upon the last published rate schedule for non-compact waste for the Barnwell facility.

The dismantling of the components residing closest to the reactor core generates radioactive waste considered unsuitable for shallow-land disposal (i.e., low-level radioactive waste with concentrations of radionuclides that exceed the limits established by the NRC for Class C radioactive waste (GTCC)). The Low-Level Radioactive Waste Policy Amendments Act of 1985 assigned the federal government the responsibility for the disposal of this material. The Act also stated that

the beneficiaries of the activities resulting in the generation of such radioactive waste bear all reasonable costs of disposing of such waste. However, to date, the federal government has not identified a cost for disposing of GTCC or a schedule for acceptance. As such, the GTCC radioactive waste has been packaged and disposed of as high-level waste, at a cost equivalent to that envisioned for the spent fuel.

For purposes of this study, GTCC is packaged in the same canisters used for spent fuel. The GTCC material is either stored with the spent fuel or shipped directly to a DOE facility as it is generated (depending upon the timing of the decommissioning and whether the spent fuel has been removed from the site prior to the start of decommissioning).

A significant portion of the waste material generated during decommissioning may only be potentially contaminated by radioactive materials. This waste can be analyzed on site or shipped off site to licensed facilities for further analysis, for processing and/or for conditioning/recovery. Reduction in the volume of low-level radioactive waste requiring disposal in a licensed low-level radioactive waste disposal facility can be accomplished through a variety of methods, including analyses and surveys or decontamination to eliminate the portion of waste that does not require disposal as radioactive waste, compaction, incineration or metal melt. The estimates for McGuire reflect the savings from waste recovery/volume reduction.

1.3.3 Radiological Criteria for License Termination

In 1997, the NRC published Subpart E, "Radiological Criteria for License Termination,"[13] amending 10 CFR Part 20. This subpart provides radiological criteria for releasing a facility for unrestricted use. The regulation states that the site can be released for unrestricted use if radioactivity levels are such that the average member of a critical group would not receive a Total Effective Dose Equivalent (TEDE) in excess of 25 millirem per year, and provided that residual radioactivity has been reduced to levels that are As Low As Reasonably Achievable (ALARA). The decommissioning estimates assume that the McGuire site will be remediated to a residual level consistent with the NRC-prescribed level. It should be noted that the NRC and the Environmental Protection Agency (EPA) differ on the amount of residual radioactivity considered acceptable in site remediation. The EPA has two limits that apply to radioactive materials. An EPA limit of 15 millirem per year is derived from criteria established by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund).[14]

An additional and separate limit of 4 millirem per year, as defined in 40 CFR §141.16, is applied to drinking water.[15]

On October 9, 2002, the NRC signed an agreement with the EPA on the radiological decommissioning and decontamination of NRC-licensed sites. The Memorandum of Understanding (MOU)[16] provides that EPA will defer exercise of authority under CERCLA for the majority of facilities decommissioned under NRC authority. The MOU also includes provisions for NRC and EPA consultation for certain sites when, at the time of license termination, (1) groundwater contamination exceeds EPA-permitted levels; (2) NRC contemplates restricted release of the site; and/or (3) residual radioactive soil concentrations exceed levels defined in the MOU.

The MOU does not impose any new requirements on NRC licensees and should reduce the involvement of the EPA with NRC licensees who are decommissioning. Most sites are expected to meet the NRC criteria for unrestricted use, and the NRC believes that only a few sites will have groundwater or soil contamination in excess of the levels specified in the MOU that trigger consultation with the EPA. However, if there are other hazardous materials on the site, the EPA may be involved in the cleanup. As such, the possibility of dual regulation remains for certain licensees. The present study does not include any costs for this occurrence.

2. DECOMMISSIONING ALTERNATIVES

Detailed cost estimates were developed to decommission the McGuire nuclear plant for the following approved decommissioning alternatives: DECON and SAFSTOR. Although the alternatives differ with respect to technique, process, cost, and schedule, they attain the same result: the ultimate release of the site for unrestricted use.

The following sections describe the basic activities associated with each alternative. Although detailed procedures for each activity identified are not provided, and the actual sequence of work may vary, the activity descriptions provide a basis not only for estimating but also for the expected scope of work, i.e., engineering and planning at the time of decommissioning.

The conceptual approach that the NRC has described in its regulations divides decommissioning into three phases. The initial phase commences with the effective date of permanent cessation of operations and involves the transition of both plant and licensee from reactor operations (i.e., power production) to facility de-activation and closure. During the first phase, notification is to be provided to the NRC certifying the permanent cessation of operations and the removal of fuel from the reactor vessel. The licensee is then prohibited from reactor operation.

The second phase encompasses activities during the storage period or during major decommissioning activities, or a combination of the two. The third phase pertains to the activities involved in license termination. The decommissioning estimates developed for McGuire are also divided into phases or periods; however, demarcation of the phases is based upon major milestones within the project or significant changes in the projected expenditures.

2.1 DECON

The DECON alternative, as defined by the NRC, is "the alternative in which the equipment, structures, and portions of a facility and site containing radioactive contaminants are removed or decontaminated to a level that permits the property to be released for unrestricted use shortly after cessation of operations." This study does not address the cost to dispose of the spent fuel residing at the site; such costs are funded through a surcharge on electrical generation. However, the study does estimate the costs incurred with the interim on-site storage of the fuel pending shipment by the DOE to an off-site disposal facility.

2.1.1 Period 1 - Preparations

In anticipation of the cessation of plant operations, detailed preparations are undertaken to provide a smooth transition from plant operations to site decommissioning. Through implementation of a staffing transition plan, the organization required to manage the intended decommissioning activities is assembled from available plant staff and outside resources. Preparations include the planning for permanent defueling of the reactor, revision of technical specifications applicable to the operating conditions and requirements, a characterization of the facility and major components, and the development of the PSDAR.

Engineering and Planning

The PSDAR, required within two years of the notice to cease operations, provides a description of the licensee's planned decommissioning activities, a timetable, and the associated financial requirements of the intended decommissioning program. Upon receipt of the PSDAR, the NRC will make the document available to the public for comment in a local hearing to be held in the vicinity of the reactor site. Ninety days following submittal and NRC receipt of the PSDAR, the licensee may begin to perform major decommissioning activities under a modified 10 CFR §50.59 procedure, i.e., without specific NRC approval. Major activities are defined as any activity that results in permanent removal of major radioactive components, permanently modifies the structure of the containment, or results in dismantling components (for shipment) containing GTCC, as defined by 10 CFR §61. Major components are further defined as comprising the reactor vessel and internals, large bore reactor coolant system piping, and other large components that are radioactive. The NRC includes the following additional criteria for use of the §50.59 process in decommissioning. The proposed activity must not:

- foreclose release of the site for possible unrestricted use,
- significantly increase decommissioning costs,
- cause any significant environmental impact, or
- violate the terms of the licensee's existing license.

Existing operational technical specifications are reviewed and modified to reflect plant conditions and the safety concerns associated with permanent cessation of operations. The environmental impact associated with the planned decommissioning activities is also considered.

Typically, a licensee will not be allowed to proceed if the consequences of a particular decommissioning activity are greater than that bounded by previously evaluated environmental assessments or impact statements. In this instance, the licensee would have to submit a license amendment for the specific activity and update the environmental report.

The decommissioning program outlined in the PSDAR will be designed to accomplish the required tasks within the ALARA guidelines (as defined in 10 CFR §20) for protection of personnel from exposure to radiation hazards. It will also address the continued protection of the health and safety of the public and the environment during the dismantling activity. Consequently, with the development of the PSDAR, activity specifications, cost-benefit and safety analyses, work packages and procedures, would be assembled to support the proposed decontamination and dismantling activities.

Site Preparations

Following final plant shutdown, and in preparation for actual decommissioning activities, the following activities are initiated:

- Characterization of the site and surrounding environs. This includes radiation surveys of work areas, major components (including the reactor vessel and its internals), internal piping, and primary shield cores.
- Isolation of the spent fuel storage pools and fuel handling systems, such that decommissioning operations can commence on the balance of the plant. The pools will remain operational for approximately thirteen years following the cessation of operations before the inventory resident at shutdown can be transferred to the DOE.
- Specification of transport and disposal requirements for activated materials and/or hazardous materials, including shielding and waste stabilization.
- Development of procedures for occupational exposure control, control and release of liquid and gaseous effluent, processing of radwaste (including dry-active waste, resins, filter media, metallic and non-metallic components generated in decommissioning), site security and emergency programs, and industrial safety.

2.1.2 Period 2 - Decommissioning Operations

This period includes the physical decommissioning activities associated with the removal and disposal of contaminated and activated components and structures, including the successful termination of the 10 CFR §50 operating license. Significant decommissioning activities in this phase include:

- Construction of temporary facilities and/or modification of existing facilities to support dismantling activities. This may include a centralized processing area to facilitate equipment removal and component preparations for off-site disposal.
- Reconfiguration and modification of site structures and facilities as needed to support decommissioning operations. This may include the upgrading of roads (on- and off-site) to facilitate hauling and transport. Modifications may be required to the containment structure to facilitate access of large/heavy equipment. Modifications may also be required to the refueling area of the building to support the segmentation of the reactor vessel internals and component extraction.
- Design and fabrication of temporary and permanent shielding to support removal and transportation activities, construction of contamination control envelopes, and the procurement of specialty tooling.
- Procurement (lease or purchase) of shipping canisters, cask liners, and industrial packages for the disposition of low-level radioactive waste.
- Decontamination of components and piping systems as required to control (minimize) worker exposure.
- Removal of piping and components no longer essential to support decommissioning operations.
- Removal of control rod drive housings and the head service structure from the reactor vessel head. Segmentation of the vessel closure head.
- Removal and segmentation of the upper internals assemblies. Segmentation will maximize the loading of the shielded transport casks, i.e., by weight and activity. The operations are conducted under water using remotely operated tooling and contamination controls.

- Disassembly and segmentation of the remaining reactor internals, including the core shroud and lower core support assembly. Some material is expected to exceed Class C disposal requirements. As such, the segments will be packaged in modified fuel storage canisters for geologic disposal.
- Segmentation of the reactor vessel. A shielded platform is installed for segmentation as cutting operations are performed in-air using remotely operated equipment within a contamination control envelope. The water level is maintained just below the cut to minimize the working area dose rates. Segments are transferred in-air to containers that are stored under water, for example, in an isolated area of the refueling canal.
- Removal of the activated portions of the concrete biological shield and accessible contaminated concrete surfaces. If dictated by the steam generator and pressurizer removal scenarios, those portions of the associated cubicles necessary for access and component extraction are removed.
- Removal of the steam generators and pressurizer for material recovery and controlled disposal. The generators will be moved to an on-site processing center, the steam domes removed and the internal components segregated for recycling. The lower shell and tube bundle will be packaged for direct disposal. These components can serve as their own burial containers provided that all penetrations are properly sealed and the internal contaminants are stabilized, e.g., with grout. Steel shielding will be added, as necessary, to those external areas of the package to meet transportation limits and regulations. The pressurizer is disposed of intact.

At least two years prior to the anticipated date of license termination, an LTP is required. Submitted as a supplement to the Final Safety Analysis Report (FSAR) or its equivalent, the plan must include: a site characterization, description of the remaining dismantling activities, plans for site remediation, procedures for the final radiation survey, designation of the end use of the site, an updated cost estimate to complete the decommissioning, and any associated environmental concerns. The NRC will notice the receipt of the plan, make the plan available for public comment, and schedule a local hearing. LTP approval will be subject to any conditions and limitations as deemed appropriate by the Commission. The licensee may then commence with the final remediation of site facilities and services, including:

- Removal of remaining plant systems and associated components as they become nonessential to the decommissioning program or worker health and safety (e.g., waste collection and treatment systems, electrical power and ventilation systems).
- Removal of the steel liners from refueling canal, disposing of the activated and contaminated sections as radioactive waste. Removal of any activated/ contaminated concrete.
- Surveys of the decontaminated areas of the containment structure.
- Remediation and removal of the contaminated equipment and material from the auxiliary and fuel buildings and any other contaminated facility. Radiation and contamination controls will be utilized until residual levels indicate that the structures and equipment can be released for unrestricted access and conventional demolition. This activity may necessitate the dismantling and disposition of most of the systems and components (both clean and contaminated) located within these buildings. This activity facilitates surface decontamination and subsequent verification surveys required prior to obtaining release for demolition.
- Routing of material removed in the decontamination and dismantling to a central processing area. Material certified to be free of contamination is released for unrestricted disposition, e.g., as scrap, recycle, or general disposal. Contaminated material is characterized and segregated for additional off-site processing (disassembly, chemical cleaning, volume reduction, and waste treatment), and/or packaged for controlled disposal at a low-level radioactive waste disposal facility.

Incorporated into the LTP is the Final Survey Plan. This plan identifies the radiological surveys to be performed once the decontamination activities are completed and is developed using the guidance provided in the "Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)."[17] This document incorporates the statistical approaches to survey design and data interpretation used by the EPA. It also identifies state-of-the-art, commercially available instrumentation and procedures for conducting radiological surveys. Use of this guidance ensures that the surveys are conducted in a manner that provides a high degree of confidence that applicable NRC criteria are satisfied. Once the survey is complete, the results are provided to the NRC in a format that can be verified. The NRC then reviews and evaluates the information, performs an independent confirmation of radiological site conditions, and makes a determination on final termination of the license.

The NRC will terminate the operating licenses if it determines that site remediation has been performed in accordance with the LTP, and that the terminal radiation survey and associated documentation demonstrate that the facility is suitable for release.

2.1.3 Period 3 - Site Restoration

Following completion of decommissioning operations, site restoration activities will begin. Efficient removal of the contaminated materials and verification that residual radionuclide concentrations are below the NRC limits will result in substantial damage to many of the structures. Although performed in a controlled, safe manner, blasting, coring, drilling, scarification (surface removal), and the other decontamination activities will substantially degrade power block structures including the reactor and auxiliary buildings. Under certain circumstances, verifying that subsurface radionuclide concentrations meet NRC site release requirements will require removal of grade slabs and lower floors, potentially weakening footings and structural supports. This removal activity will be necessary for those facilities and plant areas where historical records, when available, indicate the potential for radionuclides having been present in the soil, where system failures have been recorded, or where it is required to confirm that subsurface process and drain lines were not breached over the operating life of the station.

Prompt dismantling of site structures is clearly the most appropriate and cost-effective option. It is unreasonable to anticipate that these structures would be repaired and preserved after the radiological contamination is removed. The cost to dismantle site structures with a work force already mobilized on site is more efficient than if the process were deferred. Site facilities quickly degrade without maintenance, adding additional expense and creating potential hazards to the public as well as to future workers. Abandonment creates a breeding ground for vermin infestation as well as other biological hazards.

This cost study presumes that non-essential structures and site facilities are dismantled as a continuation of the decommissioning activity. Foundations and exterior walls are removed to a nominal depth of three feet below grade. The three-foot depth allows for the placement of gravel for drainage, as well as topsoil, so that vegetation can be established for erosion control. Site areas affected by the dismantling activities are restored and the plant area graded as required to prevent ponding and inhibit the refloating of subsurface materials.

Non-contaminated concrete rubble produced by demolition activities is processed to remove reinforcing steel and miscellaneous embedments. The processed material is then used on site to backfill foundation voids. Excess non-contaminated materials are trucked to an off-site area for disposal as construction debris.

2.1.4 ISFSI Operations and Decommissioning

The ISFSI will continue to operate under a separate and independent license (10 CFR §72) following the termination of the §50 operating license. Assuming the DOE starts accepting fuel from McGuire in 2020, transfer of spent fuel from the ISFSI is anticipated to begin in 2056, and continue through the year 2061.

At the conclusion of the spent fuel transfer process, the ISFSI will be decommissioned. The Commission will terminate the §72 license when it determines that the remediation of the ISFSI has been performed in accordance with an ISFSI license termination plan and that the final radiation survey and associated documentation demonstrate that the facility is suitable for release. Once the requirements are satisfied, the NRC can terminate the license for the ISFSI.

The assumed design for the ISFSI is based upon the use of a multi-purpose canister and a concrete overpack for pad storage. For purposes of this cost analysis, it is assumed that once the inner canisters containing the spent fuel assemblies have been removed, any required decontamination performed on the storage overpack (some minor activation is assumed), and the license for the facility terminated, the concrete overpacks can be dismantled using conventional techniques for the demolition of reinforced concrete. The concrete storage pad is then removed and the area regraded.

2.2 SAFSTOR

The NRC defines SAFSTOR as "the alternative in which the nuclear facility is placed and maintained in a condition that allows the nuclear facility to be safely stored and subsequently decontaminated (deferred decontamination) to levels that permit release for unrestricted use." The facility is left intact (during the dormancy period), with structures maintained in a sound condition. Systems that are not required to support the spent fuel pools or site surveillance and security are drained, de-energized, and secured. Minimal cleaning/removal of loose contamination and/or fixation and sealing of

remaining contamination is performed. Access to contaminated areas is secured to provide controlled access for inspection and maintenance.

The engineering and planning requirements are similar to those for the DECON alternative, although a shorter time period is expected for these activities due to the more limited work scope. Site preparations are also similar to those for the DECON alternative. However, with the exception of the required radiation surveys and site characterizations, the mobilization and preparation of site facilities is less extensive.

2.2.1 Period 1 - Preparations

Preparations for long-term storage include the planning for permanent defueling of the reactor, revision of technical specifications appropriate to the operating conditions and requirements, a characterization of the facility and major components, and the development of the PSDAR.

The process of placing the plant in safe-storage includes, but is not limited to, the following activities:

- Isolating of the spent fuel storage services and fuel handling systems so that safe-storage operations may commence on the balance of the plant. This activity may be carried out by plant personnel in accordance with existing operating technical specifications. Activities are scheduled around the fuel handling systems to the greatest extent possible.
- Transferring of the spent fuel from the storage pools to the DOE, following the minimum required cooling period in the spent fuel pools.
- Draining and de-energizing of the non-contaminated systems not required to support continued site operations or maintenance.
- Disposing of contaminated filter elements and resin beds not required for processing wastes from layup activities for future operations.
- Draining of the reactor vessel, with the internals left in place and the vessel head secured.
- Draining and de-energizing non-essential, contaminated systems with decontamination as required for future maintenance and inspection.

- Preparing lighting and alarm systems whose continued use is required; de-energizing portions of fire protection, electric power, and HVAC systems whose continued use is not required.
- Cleaning of the loose surface contamination from building access pathways.
- Performing an interim radiation survey of plant, posting warning signs where appropriate.
- Erecting physical barriers and/or securing all access to radioactive or contaminated areas, except as required for inspection and maintenance.
- Installing security and surveillance monitoring equipment and relocating security fence around secured structures, as required.

2.2.2 Period 2 - Dormancy

The second phase identified by the NRC in its rule addresses licensed activities during a storage period and is applicable to the dormancy phases of the deferred decommissioning alternatives. Dormancy activities include a 24-hour security force, preventive and corrective maintenance on security systems, area lighting, general building maintenance, heating and ventilation of buildings, routine radiological inspections of contaminated structures, maintenance of structural integrity, and a site environmental and radiation monitoring program. Resident maintenance personnel perform equipment maintenance, inspection activities, routine services to maintain safe conditions, adequate lighting, heating, and ventilation, and periodic preventive maintenance on essential site services.

An environmental surveillance program is carried out during the dormancy period to ensure that releases of radioactive material to the environment are prevented and/or detected and controlled. Appropriate emergency procedures are established and initiated for potential releases that exceed prescribed limits. The environmental surveillance program constitutes an abbreviated version of the program in effect during normal plant operations.

Security during the dormancy period is conducted primarily to prevent unauthorized entry and to protect the public from the consequences of its own actions. The security fence, sensors, alarms, and other surveillance equipment provide security. Fire and radiation alarms are also monitored and maintained.

Consistent with the DECON scenario, the spent fuel storage pools are emptied within thirteen years of the cessation of operations. The transfer of the spent fuel to the DOE continues throughout the dormancy period until completed in 2061. Once emptied, the ISFSI is secured for storage and decommissioned along with the power block structures in Period 4.

After an optional period of storage (such that license termination is accomplished within 60 years of final shutdown), it is required that the licensee submit an application to terminate the license, along with an LTP (described in Section 2.1.2), thereby initiating the third phase.

2.2.3 Periods 3 and 4 - Delayed Decommissioning

Prior to the commencement of decommissioning operations, preparations are undertaken to reactivate site services and prepare for decommissioning. Preparations include engineering and planning, a detailed site characterization, and the assembly of a decommissioning management organization. Final planning for activities and the writing of activity specifications and detailed procedures are also initiated at this time.

Much of the work in developing a termination plan is relevant to the development of the detailed engineering plans and procedures. The activities associated with this phase and the follow-on decontamination and dismantling processes are detailed in Sections 2.1.1 and 2.1.2. The primary difference between the sequences anticipated for the DECON and this deferred scenario is the absence, in the latter, of any constraint on the availability of the fuel storage facilities for decommissioning.

Variations in the length of the dormancy period are expected to have little effect upon the quantities of radioactive wastes generated from system and structure removal operations. Given the levels of radioactivity and spectrum of radionuclides expected from sixty years of plant operation, no plant process system identified as being contaminated upon final shutdown will become releasable due to the decay period alone, i.e., there is no significant reduction in the waste generated from the decommissioning activities. However, due to the lower activity levels, a greater percentage of the waste volume can be designated for off-site processing and recovery.

The delay in decommissioning also yields lower working area radiation levels. As such, the estimate for this delayed scenario incorporates

reduced ALARA controls for the SAFSTOR's lower occupational exposure potential.

Although the initial radiation levels due to ^{60}Co will decrease during the dormancy period, the internal components of the reactor vessel will still exhibit sufficiently high radiation dose rates to require remote sectioning under water due to the presence of long-lived radionuclides such as ^{94}Nb, ^{59}Ni, and ^{63}Ni. Therefore, the dismantling procedures described for the DECON alternative would still be employed during this scenario. Portions of the biological shield will still be radioactive due to the presence of activated trace elements with long half-lives (^{152}Eu and ^{154}Eu). Decontamination will require controlled removal and disposal. It is assumed that radioactive corrosion products on inner surfaces of piping and components will not have decayed to levels that will permit unrestricted use or allow conventional removal. These systems and components will be surveyed as they are removed and disposed of in accordance with the existing radioactive release criteria.

2.2.4 Period 5 - Site Restoration

Following completion of decommissioning operations, site-restoration activities can begin. Dismantling, as a continuation of the decommissioning process, is clearly the most appropriate and cost-effective option, as described in Section 2.1.3. The basis for the dismantling cost in this scenario is consistent with that described for DECON, presuming the removal of structures and site facilities to a nominal depth of three feet below grade and the limited restoration of the site.

3. COST ESTIMATE

The cost estimates prepared for decommissioning McGuire consider the unique features of the site, including the NSSS, power generation systems, support services, site buildings, and ancillary facilities. The basis of the estimates, including the sources of information relied upon, the estimating methodology employed, site-specific considerations, and other pertinent assumptions, is described in this section.

3.1 BASIS OF ESTIMATE

The estimates were developed using the site-specific, technical information from the 2003 analysis. This information was reviewed for the current analysis and updated as deemed appropriate. The site-specific considerations and assumptions used in the previous evaluation were also revisited. Modifications were incorporated where new information was available or experience from ongoing decommissioning programs provided viable alternatives or improved processes.

3.2 METHODOLOGY

The methodology used to develop the estimates follows the basic approach originally presented in the AIF/NESP-036 study report, "Guidelines for Producing Commercial Nuclear Power Plant Decommissioning Cost Estimates,"[18] and the DOE "Decommissioning Handbook."[19] These documents present a unit factor method for estimating decommissioning activity costs, which simplifies the estimating calculations. Unit factors for concrete removal ($/cubic yard), steel removal ($/ton), and cutting costs ($/inch) are developed using local labor rates. The activity-dependent costs are estimated with the item quantities (cubic yards and tons), developed from plant drawings and inventory documents. Removal rates and material costs for the conventional disposition of components and structures rely upon information available in the industry publication, "Building Construction Cost Data," published by R.S. Means.[20]

The unit factor method provides a demonstrable basis for establishing reliable cost estimates. The detail provided in the unit factors, including activity duration, labor costs (by craft), and equipment and consumable costs, ensures that essential elements have not been omitted. Appendix A presents the detailed development of a typical unit factor. Appendix B provides the values contained within one set of factors developed for this analysis.

This analysis reflects lessons learned from TLG's involvement in the Shippingport Station Decommissioning Project, completed in 1989, as well as the decommissioning of the Cintichem reactor, hot cells, and associated facilities, completed in 1997. In addition, the planning and engineering for the Pathfinder, Shoreham, Rancho Seco, Trojan, Yankee Rowe, Big Rock Point, Maine Yankee, Humboldt Bay-3, Oyster Creek, Connecticut Yankee, and San Onofre-1 nuclear units have provided additional insight into the process, the regulatory aspects, and the technical challenges of decommissioning commercial nuclear units.

Work Difficulty Factors

TLG has historically applied work difficulty adjustment factors (WDFs) to account for the inefficiencies in working in a power plant environment. WDFs are assigned to each unique set of unit factors, commensurate with the inefficiencies associated with working in confined, hazardous environments. The ranges used for the WDFs are as follows:

- Access Factor 10% to 20%
- Respiratory Protection Factor 10% to 50%
- Radiation/ALARA Factor 10% to 37%
- Protective Clothing Factor 10% to 30%
- Work Break Factor 8.33%

The factors and their associated range of values were developed in conjunction with the AIF/NESP-036 study. The application of the factors is discussed in more detail in that publication.

Scheduling Program Durations

The unit factors, adjusted by the WDFs as described above, are applied against the inventory of materials to be removed in the radiologically controlled areas. The resulting man-hours, or crew-hours, are used in the development of the decommissioning program schedule, using resource loading and event sequencing considerations. The scheduling of conventional removal and dismantling activities is based upon productivity information available from the "Building Construction Cost Data" publication.

An activity duration critical path is used to determine the total decommissioning program schedule. The schedule is relied upon in calculating the carrying costs, which include program management, administration, field

engineering, equipment rental, and support services such as quality control and security. This systematic approach for assembling decommissioning estimates ensures a high degree of confidence in the reliability of the resulting costs.

3.3 IMPACT OF DECOMMISSIONING MULTIPLE REACTOR UNITS

In estimating the near simultaneous decommissioning of two co-located reactor units there can be opportunities to achieve economies of scale, by sharing costs between units, and coordinating the sequence of work activities. There will also be schedule constraints, particularly where there are requirements for specialty equipment and staff, or practical limitations on when final status surveys can take place. For purposes of the estimate, Units 1 and 2 are assumed to be essentially identical. Common facilities have been assigned to Unit 2. A summary of the principal impacts are listed below.

- The sequence of work generally follows the principal that the work is done at Unit 1 first, followed by similar work at Unit 2. This permits the experience gained at Unit 1 to be applied by the workforce at the second unit. It should be noted however, that the estimate does not consider productivity improvements at the second unit, since there is little documented experience with decommissioning two units simultaneously. The work associated with developing activity specifications and procedures can be considered essentially identical between the two units, therefore the second unit costs are assumed to be a fraction of the first unit (~ 43%).
- Segmenting the reactor vessel and internals will require the use of special equipment. The decommissioning project will be scheduled such that Unit 2's reactor internals and vessel are segmented immediately after the activities at Unit 1 have been completed.
- Some program management and support costs, particularly costs associated with the more senior positions, can be avoided with two reactors undergoing decommissioning simultaneously. As a result, the estimate is based on a "lead" unit that includes these senior positions, and a "second" unit that excludes these positions. The designation as lead is based on the unit undertaking the most complex tasks (for instance vessel segmentation) or performing tasks for the first time.
- The final radiological survey schedule is also affected by a two-unit decommissioning schedule. It would be considered impractical to try to complete the final status survey of Unit 1, while Unit 2 still has ongoing radiological remediation work and waste handling in process. As such, the transfer of the spent fuel from the storage pools and subsequent

decontamination of the fuel handling buildings is coordinated so as to synchronize the final status survey for the station.

- The final demolition of buildings at Units 1 and 2 are considered to take place concurrently. This is considered a reasonable assumption since access to the buildings is considered good at the station.
- Unit 1, as the first unit to enter decommissioning, incurs the majority of site characterization costs.
- Shared systems and common structures are generally assigned to Unit 2.
- Station costs such as emergency response fees, regulatory agency fees, corporate overhead, and insurance are generally allocated on an equal basis between the two units.

3.4 FINANCIAL COMPONENTS OF THE COST MODEL

TLG's proprietary decommissioning cost model, DECCER, produces a number of distinct cost elements. These direct expenditures, however, do not comprise the total cost to accomplish the project goal, i.e., license termination and site restoration.

Inherent in any cost estimate that does not rely on historical data is the inability to specify the precise source of costs imposed by factors such as tool breakage, accidents, illnesses, weather delays, and labor stoppages. In the DECCER cost model, contingency fulfills this role. Contingency is added to each line item to account for costs that are difficult or impossible to develop analytically. Such costs are historically inevitable over the duration of a job of this magnitude; therefore, this cost analysis includes funds to cover these types of expenses.

3.4.1 Contingency

The activity- and period-dependent costs are combined to develop the total decommissioning cost. A contingency is then applied on a line-item basis, using one or more of the contingency types listed in the AIF/NESP-036 study. "Contingencies" are defined in the American Association of Cost Engineers "Project and Cost Engineers' Handbook"[21] as "specific provision for unforeseeable elements of cost within the defined project scope; particularly important where previous experience relating estimates and actual costs has shown that unforeseeable events which will increase costs are likely to occur." The cost elements in this analysis are based upon ideal conditions and maximum efficiency; therefore, consistent with industry practice,

contingency is included. In the AIF/NESP-036 study, the types of unforeseeable events that are likely to occur in decommissioning are discussed and guidelines are provided for percentage contingency in each category. It should be noted that contingency, as used in this analysis, does not account for price escalation and inflation in the cost of decommissioning over the remaining operating life of the station.

Contingency funds are an integral part of the total cost to complete the decommissioning process. Exclusion of this component puts at risk a successful completion of the intended tasks and, potentially, subsequent related activities. For this study, TLG examined the major activity-related problems (decontamination, segmentation, equipment handling, packaging, transport, and waste disposal) that necessitate a contingency. Individual activity contingencies ranged from 10% to 75%, depending on the degree of difficulty judged to be appropriate from TLG's actual decommissioning experience. The contingency values used in this study are as follows:

• Decontamination	50%
• Contaminated Component Removal	25%
• Contaminated Component Packaging	10%
• Contaminated Component Transport	15%
• Low-Level Radioactive Waste Disposal	25%
• Reactor Segmentation	75%
• NSSS Component Removal	25%
• Reactor Waste Packaging	25%
• Reactor Waste Transport	25%
• Reactor Vessel Component Disposal	50%
• GTCC Disposal	15%
• Non-Radioactive Component Removal	15%
• Heavy Equipment and Tooling	15%
• Supplies	25%
• Engineering	15%
• Energy	15%
• Characterization and Termination Surveys	30%
• Construction	15%
• Taxes and Fees	10%
• Insurance	10%
• Staffing	15%

The contingency values are applied to the appropriate components of the estimates on a line item basis. A composite value is then reported at the end of each detailed estimate (as provided in Appendix C and D). For example, the composite contingency value reported for the DECON alternative in Appendix C is approximately 18.3% and for the SAFSTOR alternative in Appendix D is approximately 17.2%.

3.4.2 Financial Risk

In addition to the routine uncertainties addressed by contingency, another cost element that is sometimes necessary to consider when bounding decommissioning costs relates to uncertainty, or risk. Examples can include changes in work scope, pricing, job performance, and other variations that could conceivably, but not necessarily, occur. Consideration is sometimes necessary to generate a level of confidence in the estimate, within a range of probabilities. TLG considers these types of costs under the broad term "financial risk." Included within the category of financial risk are:

- Transition activities and costs: ancillary expenses associated with eliminating 50% to 80% of the site labor force shortly after the cessation of plant operations, added cost for worker separation packages throughout the decommissioning program, national or company-mandated retraining, and retention incentives for key personnel.
- Delays in approval of the decommissioning plan due to intervention, public participation in local community meetings, legal challenges, and national and local hearings.
- Changes in the project work scope from the baseline estimate, involving the discovery of unexpected levels of contaminants, contamination in places not previously expected, contaminated soil previously undiscovered (either radioactive or hazardous material contamination), variations in plant inventory or configuration not indicated by the as-built drawings.
- Regulatory changes, for example, affecting worker health and safety, site release criteria, waste transportation, and disposal.
- Policy decisions altering national commitments (e.g., in the ability to accommodate certain waste forms for disposition), or in the timetable for such, for example, the start and rate of acceptance of spent fuel by the DOE.

- Pricing changes for basic inputs such as labor, energy, materials, and disposal. Items subject to widespread price competition (such as materials) may not show significant variation; however, others such as waste disposal could exhibit large pricing uncertainties, particularly in markets where limited access to services is available.

It has been TLG's experience that the results of a risk analysis, when compared with the base case estimate for decommissioning, indicate that the chances of the base decommissioning estimate being too high is a low probability, and the chances that the estimate is too low is a higher probability. This is mostly due to the pricing uncertainty for low-level radioactive waste burial, and to a lesser extent due to schedule increases from changes in plant conditions and to pricing variations in the cost of labor (both craft and staff). This cost study, however, does not add any additional costs to the estimate for financial risk, since there is insufficient historical data from which to project future liabilities. Consequently, the areas of uncertainty or risk are revisited periodically and addressed through repeated revisions or updates of the base estimates.

3.5 SITE-SPECIFIC CONSIDERATIONS

There are a number of site-specific considerations that affect the method for dismantling and removal of equipment from the site and the degree of restoration required. The cost impact of the considerations identified below is included in this cost study.

3.5.1 Spent Fuel Management

The cost to dispose the spent fuel generated from plant operations is not reflected within the estimates to decommission McGuire. Ultimate disposition of the spent fuel is within the province of the DOE's Waste Management System, as defined by the Nuclear Waste Policy Act. As such, the disposal cost is financed by a 1 mill/kWhr surcharge paid into the DOE's waste fund during operations. However, the NRC requires licensees to establish a program to manage and provide funding for the management of all irradiated fuel at the reactor site until title of the fuel is transferred to the Secretary of Energy. This funding requirement is fulfilled through inclusion of certain high-level waste cost elements within the estimates, as described below.

Completion of the decommissioning process is highly dependent upon the DOE's ability to remove spent fuel from the site. The timing for

removal of spent fuel from the site is based upon the DOE's most recently published annual acceptance rates of 400 MTU/year for year 1, 3,800 MTU total for years 2 through 4 and 3,000 MTU/year for year 5 and beyond.[22] The DOE contracts provide mechanisms for altering the oldest fuel first allocation scheme, including emergency deliveries, exchanges of allocations amongst utilities and the option of providing priority acceptance from permanently shutdown nuclear reactors. Because it is unclear how these mechanisms may operate once DOE begins accepting spent fuel from commercial reactors, this study assumes that DOE will accept spent fuel in an oldest fuel first order.

ISFSI

An ISFSI, which can be operated under a separate and independent license, has been constructed to support continued plant operations. The facility is not required to support future decommissioning operations; however, there will be spent fuel located at the ISFSI (from plant operations) that will need to be transferred to the DOE during decommissioning. This fuel is assumed to be transferred after the pools are emptied.

The ISFSI will continue to operate throughout decommissioning, and beyond the termination of the operating license in the DECON decommissioning scenario, until such time that the transfer of spent fuel to the DOE can be completed. Assuming that DOE commences repository operation in 2017, McGuire fuel is projected to be removed from the site beginning in 2020. The process is expected to be completed by the year 2061, based upon the current shutdown date, as delineated in Table 3.1. The scenario is similar for the SAFSTOR alternative; however, based upon the expected completion date for fuel transfer, the ISFSI will be emptied prior to the commencement of decommissioning operations.

Operation and maintenance costs for the spent fuel pools and the ISFSI are included within the estimates and address the cost for staffing the facility, as well as security, insurance, and licensing fees. Costs are also provided for the final disposition of the facilities once the transfer is complete.

Storage Canister Design

A multi-purpose storage canister, with a 24-fuel assembly capacity, is assumed to be used at the ISFSI and in the transfer of spent fuel to the DOE. For fuel transferred directly from the pools to the DOE, the DOE

was assumed to provide Transport, Aging and Disposal (TAD) canisters with a 21 assembly capacity. For estimating purposes, the fuel currently stored in 32-assembly, single-purpose canisters at the McGuire site will be returned to the pool and repackaged for transport to a DOE facility.

Canister Loading and Transfer

An average cost of $1,800 per assembly is used for the labor and equipment to transfer and load each spent fuel canister into the DOE transport cask from the wet storage pools. For estimating purposes, 50% of this cost is used to estimate the cost to transfer the fuel from the ISFSI into the transport cask. An additional cost of $100,000 is used for the labor and equipment to perform the closure and testing of the TAD cask for shipment to the DOE repository.

Operations and Maintenance

An annual cost (excluding labor) of approximately $745,000 and $109,000 are used for operation and maintenance of the spent fuel pools and the ISFSI, respectively. Pool operations are expected to continue approximately thirteen years after the cessation of operations. ISFSI operating costs are based upon a 19 year period of operations following plant shutdown.

ISFSI Design Considerations

A multi-purpose (storage and transport) dry shielded storage canister with a vertical, reinforced concrete storage overpack is used as a basis for the cost analyses. The overpacks are assumed to have some level of neutron-induced activation as a result of the long-term storage of the fuel, i.e., to levels exceeding free-release limits. The cost of the disposition of this material, as well as the demolition of the ISFSI facility, is included in the estimates.

GTCC

The dismantling of the reactor internals generates radioactive waste considered unsuitable for shallow land disposal (i.e., low-level radioactive waste with concentrations of radionuclides that exceed the limits established by the NRC for Class C radioactive waste (GTCC)). The Low-Level Radioactive Waste Policy Amendments Act of 1985 assigned the federal government the responsibility for the disposal of this material. The Act also stated that the beneficiaries of the activities

resulting in the generation of such radioactive waste bear all reasonable costs of disposing of such waste. Although there are strong arguments that GTCC waste is covered by the spent fuel contact with DOE and the fees being paid pursuant to that contract, DOE has taken the position that GTCC waste is not covered by that contract or its fees and that utilities, including Duke Energy, will have to pay an additional fee for the disposal of their GTCC waste. However, to date, the federal government has not identified a cost for disposing of GTCC or a schedule for acceptance. As such, the GTCC radioactive waste has been packaged and disposed of as high-level waste, at a cost equivalent to that envisioned for the spent fuel.

For purposes of this study, GTCC is packaged in the same canisters used to store spent fuel. Disposal costs are based upon a cost equivalent to that envisioned for the spent fuel. It is not anticipated that the DOE would accept this waste prior to completing the transfer of spent fuel. Therefore, until such time the DOE is ready to accept GTCC waste, it is reasonable to assume that this material would remain in storage with the spent fuel in the ISFSI at the McGuire site (for the DECON alternative). In the SAFSTOR scenario, the GTCC material is shipped directly to a DOE facility as it is generated since the fuel has been removed from the site prior to the start of decommissioning and the ISFSI deactivated.

3.5.2 Reactor Vessel and Internal Components

The reactor pressure vessel and internal components are segmented for disposal in shielded, reusable transportation casks. Segmentation is performed in the refueling canal, where a turntable and remote cutter are installed. The vessel is segmented in place, using a mast-mounted cutter supported off the lower head and directed from a shielded work platform installed overhead in the reactor cavity. Transportation cask specifications and transportation regulations dictate the segmentation and packaging methodology.

Intact disposal of reactor vessel shells has been successfully demonstrated at several of the sites currently being decommissioned. Access to navigable waterways has allowed these large packages to be transported to the Barnwell disposal site with minimal overland travel. Intact disposal of the reactor vessel and internal components can provide savings in cost and worker exposure by eliminating the complex segmentation requirements, isolation of the GTCC material, and transport/storage of the resulting waste packages. Portland General

Electric (PGE) was able to dispose of the Trojan reactor as an intact package (including the internals). However, its location on the Columbia River simplified the transportation analysis since:

- the reactor package could be secured to the transport vehicle for the entire journey, i.e., the package was not lifted during transport,
- there were no man-made or natural terrain features between the plant site and the disposal location that could produce a large drop, and
- transport speeds were very low, limited by the overland transport vehicle and the river barge.

As a member of the Northwest Compact, PGE had a site available for disposal of the package - the US Ecology facility in Washington State. The characteristics of this arid site proved favorable in demonstrating compliance with land disposal regulations.

It is not known whether this option will be available when the McGuire plant ceases operation. Future viability of this option will depend upon the ultimate location of the disposal site, as well as the disposal site licensee's ability to accept highly radioactive packages and effectively isolate them from the environment. Consequently, the study assumes the reactor vessel will require segmentation, as a bounding condition. With lower levels of activation, the vessel shell can be packaged more efficiently than the curie-limited internal components. This will allow the use of more conventional waste packages rather than shielded casks for transport (although some shielded casks are still required).

3.5.3 Primary System Components

In the DECON scenario, the reactor coolant system components are assumed to be decontaminated using chemical agents prior to the start of dismantling operations. This type of decontamination can be expected to have a significant ALARA impact, since in this scenario the removal work is done within the first few years of shutdown. A decontamination factor (average reduction) of 10 is assumed for the process. Disposal of the decontamination solution effluent is included within the estimate as a "process liquid waste" charge. In the SAFSTOR scenario, radionuclide decay is expected to provide the same benefit and, therefore, a chemical decontamination is not included.

The following discussion deals with the removal and disposition of the steam generators, but the techniques involved are also applicable to other large components, such as heat exchangers, component coolers, and the pressurizer. The steam generators' size and weight, as well as their location within the reactor building, will ultimately determine the removal strategy.

A trolley crane is set up for the removal of the generators. It can also be used to move portions of the steam generator cubicle walls and floor slabs from the reactor building to a location where they can be decontaminated and transported to the material handling area. Interferences within the work area, such as grating, piping, and other components are removed to create sufficient laydown space for processing these large components.

The generators are rigged for removal, disconnected from the surrounding piping and supports, and maneuvered into the open area where they are lowered onto a dolly. Each generator is rotated into the horizontal position for extraction from the containment and placed onto a multi-wheeled vehicle for transport to an on-site processing and storage area.

The generators are disassembled on-site with the outer shell and lightly contaminated subassemblies designated for off-site recycling. The more highly contaminated tube sheet and tube bundle are packaged for direct disposal. The interior volume is filled with low-density cellular concrete for stabilization of the internal contamination.

Disposal costs are based upon the displaced volume and weight of the units. Each component is then loaded onto a rail car for transport to the disposal facility.

Reactor coolant piping is cut from the reactor vessel once the water level in the vessel (used for personnel shielding during dismantling and cutting operations in and around the vessel) is dropped below the nozzle zone. The piping is boxed and transported by shielded van. The reactor coolant pumps and motors are lifted out intact, packaged, and transported for processing and/or disposal.

3.5.4 Retired Components

The eight retired steam generators currently in storage at the site will be removed and disposed of prior to the cessation of plant operations. No

costs are allocated in the current cost analysis for the removal and disposal of the retired steam generators.

3.5.5 Main Turbine and Condenser

The main turbine is dismantled using conventional maintenance procedures. The turbine rotors and shafts are removed to a laydown area. The lower turbine casings are removed from their anchors by controlled demolition. The main condensers are also disassembled and moved to a laydown area. Material is then prepared for transportation to an off-site recycling facility where it is surveyed and designated for either decontamination or volume reduction, conventional disposal, or controlled disposal. Components are packaged and readied for transport in accordance with the intended disposition.

3.5.6 Transportation Methods

Contaminated piping, components, and structural material other than the highly activated reactor vessel and internal components will qualify as LSA-I, II or III or Surface Contaminated Object, SCO-I or II, as described in Title 49.[23] The contaminated material will be packaged in Industrial Packages (IP-1, IP-2, or IP-3, as defined in subpart 173.411) for transport unless demonstrated to qualify as their own shipping containers. The reactor vessel and internal components are expected to be transported in accordance with Part 71, as Type B. It is conceivable that the reactor, due to its limited specific activity, could qualify as LSA II or III. However, the high radiation levels on the outer surface would require that additional shielding be incorporated within the packaging so as to attenuate the dose to levels acceptable for transport.

Any fuel cladding failure that occurred during the lifetime of the plant is assumed to have released fission products at sufficiently low levels that the buildup of quantities of long-lived isotopes (e.g., ^{137}Cs, ^{90}Sr, or transuranics) has been prevented from reaching levels exceeding those that permit the major reactor components to be shipped under current transportation regulations and disposal requirements.

Transport of the highly activated metal, produced in the segmentation of the reactor vessel and internal components, will be by shielded truck cask. Cask shipments may exceed 95,000 pounds, including vessel segment(s), supplementary shielding, cask tie-downs, and tractor-trailer. The maximum level of activity per shipment assumed permissible was based upon the license limits of the available shielded

transport casks. The segmentation scheme for the vessel and internal segments is designed to meet these limits.

The transport of large intact components (e.g., large heat exchangers and other oversized components) will be by a combination of truck, rail, and/or multi-wheeled transporter.

Transportation costs for material requiring controlled disposal are based upon the mileage to the EnergySolutions facility in Clive, Utah. Transportation costs for off-site waste processing are based upon the mileage to Oak Ridge, Tennessee. Truck transport costs are estimated using published tariffs from Tri-State Motor Transit.[24]

3.5.7 Low-Level Radioactive Waste Disposal

To the greatest extent practical, metallic material generated in the decontamination and dismantling processes is processed to reduce the total cost of controlled disposal. Material meeting the regulatory and/or site release criterion, is released as scrap, requiring no further cost consideration. Conditioning (preparing the material to meet the waste acceptance criteria of the disposal site) and recovery of the waste stream is performed off site at a licensed processing center. Any material leaving the site is subject to a survey and release charge, at a minimum. Based on TLG's experience, rates were assumed for off-site processing as well as survey and release.

The mass of radioactive waste generated during the various decommissioning activities at the site is shown on a line-item basis in the detailed Appendices C and D, and summarized in Section 5. The quantified waste summaries shown in these tables are consistent with 10 CFR Part 61 classifications. Commercially available steel containers are presumed to be used for the disposal of piping, small components, and concrete. Larger components can serve as their own containers, with proper closure of all openings, access ways, and penetrations. The volumes are calculated based on the exterior package dimensions for containerized material or a specific calculation for components serving as their own waste containers.

The more highly activated reactor components will be shipped in reusable, shielded truck casks with disposable liners. In calculating disposal costs, the burial fees are applied against the liner volume, as well as the special handling requirements of the payload. Packaging efficiencies are lower for the highly activated materials (greater than

Type A quantity waste), where high concentrations of gamma-emitting radionuclides limit the capacity of the shipping canisters.

Disposal fees are based upon estimated charges, with surcharges added for the highly activated components, for example, generated in the segmentation of the reactor vessel. The cost to dispose of the lowest level and majority of the material generated from the decontamination and dismantling activities is based upon the current cost for disposal at EnergySolutions facility in Clive, Utah. Disposal costs for the higher activity waste (Class B and C) were based upon the last published rate schedule for non-compact waste for the Barnwell facility (as a proxy).

3.5.8 Site Conditions Following Decommissioning

The NRC will terminate (or amend) the site license if it determines that site remediation has been performed in accordance with the license termination plan, and that the terminal radiation survey and associated documentation demonstrate that the facility is suitable for release. The NRC's involvement in the decommissioning process will end at this point. Local building codes and state environmental regulations will dictate the next step in the decommissioning process, as well as the owner's own future plans for the site.

All structures will be removed except for the switchyard. The switchyard is required for grid operations. Structures to be removed include but are not limited to the Reactor Buildings, Auxiliary Buildings, Service Building, Turbine Buildings, Intake and Discharge Structures, settling and holding ponds. The landfill and shooting range will be remediated and closed.

The structures that may require decontamination or radiological remediation are the Reactor Buildings, Auxiliary Buildings, Fuel Buildings, Retired Steam Generator Storage Facility, Equipment Staging Building, Hot Machine Shop, Contaminated Material Handling Area, Radwaste Facility and Waste Solidification Building.

The estimates presented herein include the dismantling of the major structures to a nominal depth of three feet below grade, backfilling and the collapsing of below grade voids, and general terra-forming such that the site upon which the power block and supplemental structures are located is transformed into a "grassy plain."

The estimate does not assume the remediation of any significant volume of contaminated soil. This assumption may be affected by continued plant operations and/or future regulatory actions, such as the development of site-specific release criteria.

Costs are included for the remediation and post-closure care and maintenance of the landfill and shooting range at the site. Since the care and maintenance of the landfill will extend beyond the active decommissioning period, a lump-sum perpetuity payment is included in the final year of decommissioning for the remaining duration.

Environmental Remediation

For purposes of this estimate, the sanitary waste pond has been closed and will not require any additional remediation. As for the chemical treatment ponds, the initial hold-up pond is concrete and should not require remediation. The settling ponds are bentonite clay lined. Samples will be taken of the settled material as part of closure. The final hold-up pond is also concrete lined and should not require remediation.

3.6 ASSUMPTIONS

The following are the major assumptions made in the development of the estimates for decommissioning the site.

3.6.1 Estimating Basis

The study follows the principles of ALARA through the use of work duration adjustment factors. These factors address the impact of activities such as radiological protection instruction, mock-up training, and the use of respiratory protection and protective clothing. The factors lengthen a task's duration, increasing costs and lengthening the overall schedule. ALARA planning is considered in the costs for engineering and planning, and in the development of activity specifications and detailed procedures. Changes to worker exposure limits may impact the decommissioning cost and project schedule.

3.6.2 Labor Costs

The craft labor required to decontaminate and dismantle the nuclear plant is acquired through standard site contracting practices. The current cost of labor at the site is used as an estimating basis.

Duke Energy will continue to provide site operations support, including decommissioning program management, licensing, radiological protection, and site security. Duke Energy will serve as the Decommissioning Operations Contractor, providing the supervisory staff needed to oversee the labor subcontractors, consultants, and specialty contractors needed to perform the work envisioned in the decontamination and dismantling effort. Duke Energy will also provide the engineering services needed to develop activity specifications, detailed procedures, detailed activation analyses, and support field activities such as structural modifications. Severance and retention costs are not included in the estimate. Reduction in staff levels will be handled through normal staffing processes.

Personnel costs are based upon average salary information provided by Duke Energy. Overhead costs are included for site and corporate support, reduced commensurate with the staffing of the project.

Security, while reduced from operating levels, is maintained throughout the decommissioning for access control, material control, and to safeguard the spent fuel.

3.6.3 Design Conditions

Any fuel cladding failure that occurred during the lifetime of the plant is assumed to have released fission products at sufficiently low levels that the buildup of quantities of long-lived isotopes (e.g., ^{137}Cs, ^{90}Sr, or transuranics) has been prevented from reaching levels exceeding those that permit the major NSSS components to be shipped under current transportation regulations and disposal requirements.

The curie contents of the vessel and internals at final shutdown are derived from those listed in NUREG/CR-3474.[25] Actual estimates are derived from the curie/gram values contained therein and adjusted for the different mass of the McGuire components, projected operating life, and different periods of decay. Additional short-lived isotopes were derived from CR-0130[26] and CR-0672,[27] and benchmarked to the long-lived values from CR-3474.

The control elements are disposed of along with the spent fuel, i.e., there is no additional cost provided for their disposal.

Activation of the containment building structure is confined to the biological shield. More extensive activation (at very low levels) of the

interior structures within containment has been detected at several reactors and the owners have elected to dispose of the affected material at a controlled facility rather than reuse the material as fill on site or send it to a landfill. The ultimate disposition of the material removed from the containment building will depend upon the site release criteria selected, as well as the designated end use for the site.

3.6.4 General

Transition Activities

Existing warehouses are cleared of non-essential material and remain for use by Duke Energy and its subcontractors. The plant's operating staff performs the following activities at no additional cost or credit to the project during the transition period:

- Drain and collect fuel oils, lubricating oils, and transformer oils for recycle and/or sale.
- Drain and collect acids, caustics, and other chemical stores for recycle and/or sale.
- Process operating waste inventories, i.e., the estimates do not address the disposition of any legacy wastes; the disposal of operating wastes during this initial period is not considered a decommissioning expense.

Scrap and Salvage

The existing plant equipment is considered obsolete and suitable for scrap as deadweight quantities only. Duke Energy will make economically reasonable efforts to salvage equipment following final plant shutdown. However, dismantling techniques assumed by TLG for equipment in this analysis are not consistent with removal techniques required for salvage (resale) of equipment. Experience has indicated that some buyers wanted equipment stripped down to very specific requirements before they would consider purchase. This required expensive rework after the equipment had been removed from its installed location. Since placing a salvage value on this machinery and equipment would be speculative, and the value would be small in comparison to the overall decommissioning expenses, this analysis does not attempt to quantify the value that an owner may realize based upon those efforts.

It is assumed, for purposes of this analysis, that any value received from the sale of scrap generated in the dismantling process would be more than offset by the on-site processing costs. The dismantling techniques assumed in the decommissioning estimates do not include the additional cost for size reduction and preparation to meet "furnace ready" conditions. For example, the recovery of copper from electrical cabling may require the removal and disposition of any contaminated insulation, an added expense. With a volatile market, the potential profit margin in scrap recovery is highly speculative, regardless of the ability to free release this material. This assumption is an implicit recognition of scrap value in the disposal of clean metallic waste at no additional cost to the project.

Furniture, tools, mobile equipment such as forklifts, trucks, bulldozers, and other property is removed at no cost or credit to the decommissioning project. Disposition may include relocation to other facilities. Spare parts are also made available for alternative use.

Energy

For estimating purposes, the plant is assumed to be de-energized, with the exception of those facilities associated with spent fuel storage. Replacement power costs are used to calculate the cost of energy consumed during decommissioning for tooling, lighting, ventilation, and essential services.

Insurance

Costs for continuing coverage (nuclear liability and property insurance) following cessation of plant operations and during decommissioning are included and based upon current operating premiums. Reductions in premiums, throughout the decommissioning process, are based upon the guidance and the limits for coverage defined in the NRC's proposed rulemaking "Financial Protection Requirements for Permanently Shutdown Nuclear Power Reactors."[28] The NRC's financial protection requirements are based on various reactor (and spent fuel) configurations.

Taxes

Property tax payments continue throughout the decommissioning process, although at a substantially reduced level. The rate of decrease

in disbursements is consistent over the same time interval for both the DECON and SAFSTOR alternatives.

The value of plant structures and equipment decreases from 100% to 0% over an eight-year period. The property taxes are determined based on a 100% value of the plant structures and equipment for the first two years, 66.7% of the value for the next three years, 33.3% of the value for the next three years, and 0% for the remainder of the decommissioning period.

Site Modifications

The perimeter fence and in-plant security barriers will be moved, as appropriate, to conform to the Site Security Plan in force during the various stages of the project.

Integrated earthworks created during the initial formation of the Lake Norman area and integral with it will be left intact and maintained in accordance with the current dam maintenance and inspection program. The on-site dike and earthwork network forming water retention ponds and lagoons will be disabled to relieve ongoing inspection requirements.

3.7 COST ESTIMATE SUMMARY

Schedules of expenditures are provided in Tables 3.1 and 3.2. The tables delineate the cost contributors by year of expenditures as well as cost contributor (e.g., labor, materials, and waste disposal).

Additional tables in Appendices C and D provide detailed costs elements. The cost elements are also assigned to one of three subcategories: "License Termination," "Spent Fuel Management," and "Site Restoration." The subcategory "License Termination" is used to accumulate costs that are consistent with "decommissioning" as defined by the NRC in its financial assurance regulations (i.e., 10 CFR §50.75). The cost reported for this subcategory is generally sufficient to terminate the plant's operating license, recognizing that there may be some additional cost impact from spent fuel management.

The "Spent Fuel Management" subcategory contains costs associated with the containerization and transfer of spent fuel from the pool to the DOE and the transfer of casks from the ISFSI to the DOE. Costs are also included for the operations of the pools and management of the ISFSI until such time that the

transfer of all fuel from this facility to an off-site location (e.g., geologic repository) is complete.

"Site Restoration" is used to capture costs associated with the dismantling and demolition of buildings and facilities demonstrated to be free from contamination. This includes structures never exposed to radioactive materials, as well as those facilities that have been decontaminated to appropriate levels. Structures are removed to a depth of three feet and backfilled to conform to local grade.

As discussed in Section 3.4.1, it is not anticipated that the DOE will accept the GTCC waste prior to completing the transfer of spent fuel. Therefore, the cost of GTCC disposal is shown in the final year of ISFSI operation (for the DECON alternative). While designated for disposal at the geologic repository along with the spent fuel, GTCC waste is still classified as low-level radioactive waste and, as such, included as a "License Termination" expense.

Decommissioning costs are reported in 2008 dollars. Costs are not inflated, escalated, or discounted over the period of expenditure (or projected lifetime of the plant). The schedules are based upon the detailed activity costs reported in Appendices C and D, along with the timeline presented in Section 4.

TABLE 3.1
SPENT FUEL MANAGEMENT SCHEDULE

Year	Fuel Assembly Inventory		DOE Acceptance
	Pool	ISFSI	
2017	2219	1751	0
2018	2219	1831	0
2019	2219	1911	0
2020	2219	1911	160
2021	2219	1911	80
2022	2219	1911	80
2023	2219	1911	160
2024	2219	1911	80
2025	2219	1911	80
2026	2219	1911	160
2027	2219	1911	80
2028	2219	1911	80
2029	2219	1911	160
2030	2219	1911	80
2031	2219	1911	80
2032	2219	1911	160
2033	2219	1911	80
2034	2219	1911	80
2035	2219	1911	160
2036	2219	1911	80
2037	2219	1911	80
2038	2219	1911	160
2039	2219	1911	80
2040	2219	1911	80
2041	2219	1911	273
2042	2219	1911	0
2043	2219	1911	193
2044	2047	1911	172
2045	1875	1911	172
2046	1703	1911	172
2047	1531	1911	172
2048 (1)	1679	1591	172
2049	1507	1591	172
2050	1335	1591	172

TABLE 3.1 (continued)
SPENT FUEL MANAGEMENT SCHEDULE

	Fuel Assembly Inventory		
Year	Pool	ISFSI	DOE Acceptance
2051	1077	1591	258
2052	819	1591	258
2053	561	1591	258
2054	303	1591	258
2055	45	1591	258
2056	0	1378	258
2057	0	1120	258
2058	0	862	258
2059	0	604	258
2060	0	346	258
2061	0	0	346
			6836

[1] Transfer of 10 TN-32 Casks from ISFSI to pool for repackaging

TABLE 3.2
McGUIRE NUCLEAR STATION, UNIT 1
DECON ALTERNATIVE
SCHEDULE OF TOTAL ANNUAL EXPENDITURES
(thousands, 2008 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2041	21,953	920	1,018	18	4,477	28,387
2042	42,246	6,504	2,771	3,794	22,094	77,410
2043	43,126	16,604	1,740	23,615	11,658	96,743
2044	38,526	12,485	1,588	17,497	9,640	79,735
2045	32,086	6,859	1,373	9,149	6,862	56,329
2046	30,810	6,558	1,324	8,698	6,649	54,038
2047	6,208	743	366	7	2,551	9,874
2048	6,225	745	367	7	2,558	9,901
2049	6,208	743	366	7	2,551	9,874
2050	6,208	743	366	7	2,551	9,874
2051	6,208	743	366	7	2,551	9,874
2052	6,225	745	367	7	2,558	9,901
2053	6,208	743	366	7	2,551	9,874
2054	6,208	743	366	7	2,551	9,874
2055	6,208	743	366	7	2,551	9,874
2056	12,142	3,433	479	2,780	10,315	29,148
2057	8,670	5,555	238	7	5,363	19,833
2058	8,816	6,946	179	0	895	16,837
2059	0	0	0	0	0	0
2060	0	0	0	0	0	0
2061	0	688	0	0	16,975	17,663
	294,278	73,243	14,008	65,618	117,899	565,046

TABLE 3.2a
McGUIRE NUCLEAR STATION, UNIT 1
DECON ALTERNATIVE
LICENSE TERMINATION EXPENDITURES
(thousands, 2008 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2041	21,759	920	1,018	18	3,765	27,480
2042	41,549	6,496	2,771	3,794	20,809	75,420
2043	41,614	16,381	1,740	23,615	10,274	93,624
2044	36,994	12,138	1,588	17,497	8,296	76,513
2045	30,537	6,348	1,373	9,149	5,581	52,988
2046	29,031	6,035	1,307	8,698	5,306	50,376
2047	0	0	24	0	0	24
2048	0	0	24	0	0	24
2049	0	0	24	0	0	24
2050	0	0	24	0	0	24
2051	0	0	24	0	0	24
2052	0	0	24	0	0	24
2053	0	0	24	0	0	24
2054	0	0	24	0	0	24
2055	0	0	24	0	0	24
2056	10,535	3,021	171	2,778	9,532	26,038
2057	2,405	538	110	7	4,970	8,030
2058	71	0	0	0	369	440
2059	0	0	0	0	0	0
2060	0	0	0	0	0	0
2061	0	688	0	0	16,975	17,663
	214,494	52,564	10,295	65,556	85,878	428,787

TABLE 3.2b
McGUIRE NUCLEAR STATION, UNIT 1
DECON ALTERNATIVE
SPENT FUEL MANAGEMENT EXPENDITURES
(thousands, 2008 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2041	0	0	0	0	713	713
2042	2	6	0	0	1,281	1,289
2043	57	170	0	0	1,281	1,507
2044	100	301	0	0	1,285	1,686
2045	159	476	0	0	1,281	1,915
2046	457	489	18	0	1,344	2,308
2047	6,208	743	366	7	2,551	9,874
2048	6,225	745	367	7	2,558	9,901
2049	6,208	743	366	7	2,551	9,874
2050	6,208	743	366	7	2,551	9,874
2051	6,208	743	366	7	2,551	9,874
2052	6,225	745	367	7	2,558	9,901
2053	6,208	743	366	7	2,551	9,874
2054	6,208	743	366	7	2,551	9,874
2055	6,208	743	366	7	2,551	9,874
2056	1,607	412	90	2	783	2,893
2057	2,850	125	115	0	357	3,447
2058	3,964	97	161	0	476	4,698
2059	0	0	0	0	0	0
2060	0	0	0	0	0	0
2061	0	0	0	0	0	0
	65,099	8,766	3,683	62	31,770	109,380

TABLE 3.2c
McGUIRE NUCLEAR STATION, UNIT 1
DECON ALTERNATIVE
SITE RESTORATION EXPENDITURES
(thousands, 2008 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2041	194	0	0	0	0	194
2042	695	2	0	0	4	701
2043	1,456	53	0	0	102	1,612
2044	1,432	46	0	0	59	1,537
2045	1,390	36	0	0	0	1,426
2046	1,321	34	0	0	0	1,355
2047	0	0	0	0	0	0
2048	0	0	0	0	0	0
2049	0	0	0	0	0	0
2050	0	0	0	0	0	0
2051	0	0	0	0	0	0
2052	0	0	0	0	0	0
2053	0	0	0	0	0	0
2054	0	0	0	0	0	0
2055	0	0	0	0	0	0
2056	0	0	0	0	0	0
2057	3,415	4,892	13	0	36	8,356
2058	4,782	6,849	18	0	50	11,699
2059	0	0	0	0	0	0
2060	0	0	0	0	0	0
2061	0	0	0	0	0	0
	14,685	11,912	31	0	251	26,879

TABLE 3.3
McGUIRE NUCLEAR STATION, UNIT 2
DECON ALTERNATIVE
SCHEDULE OF TOTAL ANNUAL EXPENDITURES
(thousands, 2008 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2043	27,365	1,417	1,525	25	6,138	36,471
2044	38,353	12,073	2,750	12,112	18,004	83,293
2045	46,904	20,172	1,737	28,941	12,757	110,511
2046	40,416	7,218	1,373	9,341	7,905	66,253
2047	40,416	7,218	1,373	9,341	7,905	66,253
2048	28,906	5,041	1,035	6,196	6,173	47,350
2049	6,210	751	366	7	2,744	10,078
2050	6,210	751	366	7	2,744	10,078
2051	6,210	751	366	7	2,744	10,078
2052	6,227	753	367	7	2,751	10,106
2053	6,210	751	366	7	2,744	10,078
2054	6,210	751	366	7	2,744	10,078
2055	6,210	751	366	7	2,744	10,078
2056	17,177	3,539	479	2,644	11,393	35,231
2057	17,026	9,581	238	7	6,712	33,565
2058	18,076	12,507	183	0	1,953	32,720
2059	3,299	221	183	0	1,295	4,998
2060	3,308	221	184	0	1,298	5,011
2061	3,295	905	183	4	18,275	22,662
2062	1,836	2,527	92	442	2,359	7,257
	329,867	87,900	13,900	69,098	121,380	622,146

TABLE 3.3a
McGUIRE NUCLEAR STATION, UNIT 2
DECON ALTERNATIVE
LICENSE TERMINATION EXPENDITURES
(thousands, 2008 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2043	27,218	1,349	1,525	25	4,967	35,083
2044	37,301	11,639	2,750	12,112	16,558	80,359
2045	44,586	19,613	1,737	28,941	11,234	106,110
2046	38,572	6,648	1,373	9,341	6,011	61,946
2047	38,572	6,648	1,373	9,341	6,011	61,946
2048	25,573	4,408	911	6,193	3,986	41,071
2049	0	0	0	0	0	0
2050	0	0	0	0	0	0
2051	0	0	0	0	0	0
2052	0	0	0	0	0	0
2053	0	0	0	0	0	0
2054	0	0	0	0	0	0
2055	0	0	0	0	0	0
2056	15,550	3,067	388	2,642	10,433	32,080
2057	4,169	595	110	7	5,861	10,743
2058	30	0	0	0	829	859
2059	0	0	0	0	0	0
2060	0	0	0	0	0	0
2061	0	688	0	0	16,975	17,663
2062	0	0	0	0	0	0
	231,570	54,655	10,168	68,602	82,864	447,859

TABLE 3.3b
McGUIRE NUCLEAR STATION, UNIT 2
DECON ALTERNATIVE
SPENT FUEL MANAGEMENT EXPENDITURES
(thousands, 2008 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2043	23	68	0	0	1,171	1,262
2044	136	408	0	0	1,410	1,955
2045	159	476	0	0	1,407	2,041
2046	175	524	0	0	1,407	2,105
2047	175	524	0	0	1,407	2,105
2048	2,226	602	124	2	1,852	4,807
2049	6,210	751	366	7	2,707	10,041
2050	6,210	751	366	7	2,707	10,041
2051	6,210	751	366	7	2,707	10,041
2052	6,227	753	367	7	2,715	10,069
2053	6,210	751	366	7	2,707	10,041
2054	6,210	751	366	7	2,707	10,041
2055	6,210	751	366	7	2,707	10,041
2056	1,627	472	90	2	916	3,108
2057	5,948	125	115	0	768	6,956
2058	8,373	101	165	0	1,027	9,666
2059	3,299	221	183	0	1,227	4,929
2060	3,308	221	184	0	1,230	4,943
2061	3,295	218	183	4	1,232	4,932
2062	1,836	2,527	92	442	2,056	6,953
	74,069	11,745	3,701	496	36,068	126,079

TABLE 3.3c
McGUIRE NUCLEAR STATION, UNIT 2
DECON ALTERNATIVE
SITE RESTORATION EXPENDITURES
(thousands, 2008 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2043	125	0	0	0	0	125
2044	917	26	0	0	36	979
2045	2,159	83	0	0	117	2,359
2046	1,670	46	0	0	487	2,202
2047	1,670	46	0	0	487	2,202
2048	1,107	30	0	0	335	1,473
2049	0	0	0	0	36	36
2050	0	0	0	0	36	36
2051	0	0	0	0	36	36
2052	0	0	0	0	37	37
2053	0	0	0	0	36	36
2054	0	0	0	0	36	36
2055	0	0	0	0	36	36
2056	0	0	0	0	43	43
2057	6,909	8,862	13	0	83	15,866
2058	9,673	12,406	18	0	98	22,195
2059	0	0	0	0	68	68
2060	0	0	0	0	69	69
2061	0	0	0	0	67	67
2062	0	0	0	0	303	303
	24,229	21,500	31	0	2,449	48,207

TABLE 3.4
McGUIRE NUCLEAR STATION, UNIT 1
SAFSTOR ALTERNATIVE
SCHEDULE OF TOTAL ANNUAL EXPENDITURES
(thousands, 2008 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2041	17,806	670	1,018	18	4,477	23,990
2042	32,679	4,198	1,755	587	19,341	58,560
2043	7,709	846	366	22	2,969	11,913
2044	7,730	848	367	22	2,977	11,945
2045	7,709	846	366	22	2,969	11,913
2046	7,709	846	366	22	2,969	11,913
2047	7,709	846	366	22	2,969	11,913
2048	7,730	848	367	22	2,977	11,945
2049	7,709	846	366	22	2,969	11,913
2050	7,709	846	366	22	2,969	11,913
2051	7,709	846	366	22	2,969	11,913
2052	7,730	848	367	22	2,977	11,945
2053	7,709	846	366	22	2,969	11,913
2054	7,709	846	366	22	2,969	11,913
2055	7,709	846	366	22	2,969	11,913
2056	4,413	514	229	21	1,489	6,664
2057	3,322	404	183	20	1,000	4,929
2058	3,322	404	183	20	1,000	4,929
2059	3,322	404	183	20	1,000	4,929
2060	3,331	405	184	20	1,003	4,942
2061	3,318	403	183	20	1,000	4,924
2062	1,920	274	183	20	803	3,200
2063	1,920	274	183	20	803	3,200
2064	1,925	275	184	20	805	3,208
2065	1,920	274	183	20	803	3,200
2066	1,920	274	183	20	803	3,200
2067	1,920	274	183	20	803	3,200
2068	1,925	275	184	20	805	3,208
2069	1,920	274	183	20	803	3,200
2070	1,920	274	183	20	803	3,200
2071	1,920	274	183	20	803	3,200
2072	1,925	275	184	20	805	3,208
2073	1,920	274	183	20	803	3,200

TABLE 3.4 (continued)
McGUIRE NUCLEAR STATION, UNIT 1
SAFSTOR ALTERNATIVE
SCHEDULE OF TOTAL ANNUAL EXPENDITURES
(thousands, 2008 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2074	1,920	274	183	20	803	3,200
2075	1,920	274	183	20	803	3,200
2076	1,925	275	184	20	805	3,208
2077	1,920	274	183	20	803	3,200
2078	1,920	274	183	20	803	3,200
2079	1,920	274	183	20	803	3,200
2080	1,925	275	184	20	805	3,208
2081	1,920	274	183	20	803	3,200
2082	1,920	274	183	20	803	3,200
2083	1,920	274	183	20	803	3,200
2084	1,925	275	184	20	805	3,208
2085	1,920	274	183	20	803	3,200
2086	1,920	274	183	20	803	3,200
2087	1,920	274	183	20	803	3,200
2088	1,925	275	184	20	805	3,208
2089	1,920	274	183	20	803	3,200
2090	1,920	274	183	20	803	3,200
2091	1,920	274	183	20	803	3,200
2092	1,925	275	184	20	805	3,208
2093	1,920	274	183	20	803	3,200
2094	1,920	274	183	20	803	3,200
2095	21,762	1,177	1,357	25	3,684	28,005
2096	32,687	6,835	1,817	4,466	7,787	53,591
2097	38,639	17,361	1,740	20,790	22,056	100,586
2098	34,393	9,205	1,413	17,074	7,120	69,206
2099	16,214	3,875	835	7,742	2,624	31,289
2100	2,729	619	366	10	4,857	8,582
2101	8,807	4,672	265	10	7,073	20,827
2102	10,232	7,002	183	0	566	17,983
2103	1,261	863	23	0	70	2,217
	401,910	79,056	22,728	51,779	151,297	706,770

TABLE 3.4a
McGUIRE NUCLEAR STATION, UNIT 1
SAFSTOR ALTERNATIVE
LICENSE TERMINATION EXPENSITURES
(thousands, 2008 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2041	17,806	670	1,018	18	3,765	23,277
2042	32,378	4,170	1,745	587	18,014	56,895
2043	1,920	302	183	22	824	3,251
2044	1,925	303	184	22	827	3,260
2045	1,920	302	183	22	824	3,251
2046	1,920	302	183	22	824	3,251
2047	1,920	302	183	22	824	3,251
2048	1,925	303	184	22	827	3,260
2049	1,920	302	183	22	824	3,251
2050	1,920	302	183	22	824	3,251
2051	1,920	302	183	22	824	3,251
2052	1,925	303	184	22	827	3,260
2053	1,920	302	183	22	824	3,251
2054	1,920	302	183	22	824	3,251
2055	1,920	302	183	22	824	3,251
2056	1,925	286	184	21	827	3,242
2057	1,920	280	183	20	824	3,228
2058	1,920	280	183	20	824	3,228
2059	1,920	280	183	20	824	3,228
2060	1,925	281	184	20	826	3,236
2061	1,920	280	183	20	824	3,228
2062	1,920	274	183	20	803	3,200
2063	1,920	274	183	20	803	3,200
2064	1,925	275	184	20	805	3,208
2065	1,920	274	183	20	803	3,200
2066	1,920	274	183	20	803	3,200
2067	1,920	274	183	20	803	3,200
2068	1,925	275	184	20	805	3,208
2069	1,920	274	183	20	803	3,200
2070	1,920	274	183	20	803	3,200
2071	1,920	274	183	20	803	3,200
2072	1,925	275	184	20	805	3,208
2073	1,920	274	183	20	803	3,200

TABLE 3.4a (continued)
McGUIRE NUCLEAR STATION, UNIT 1
SAFSTOR ALTERNATIVE
LICENSE TERMINATION EXPENDITURES
(thousands, 2008 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2074	1,920	274	183	20	803	3,200
2075	1,920	274	183	20	803	3,200
2076	1,925	275	184	20	805	3,208
2077	1,920	274	183	20	803	3,200
2078	1,920	274	183	20	803	3,200
2079	1,920	274	183	20	803	3,200
2080	1,925	275	184	20	805	3,208
2081	1,920	274	183	20	803	3,200
2082	1,920	274	183	20	803	3,200
2083	1,920	274	183	20	803	3,200
2084	1,925	275	184	20	805	3,208
2085	1,920	274	183	20	803	3,200
2086	1,920	274	183	20	803	3,200
2087	1,920	274	183	20	803	3,200
2088	1,925	275	184	20	805	3,208
2089	1,920	274	183	20	803	3,200
2090	1,920	274	183	20	803	3,200
2091	1,920	274	183	20	803	3,200
2092	1,925	275	184	20	805	3,208
2093	1,920	274	183	20	803	3,200
2094	1,920	274	183	20	803	3,200
2095	21,498	1,177	1,357	25	3,684	27,741
2096	31,544	6,821	1,817	4,466	7,787	52,434
2097	36,867	17,298	1,740	20,790	22,056	98,751
2098	32,029	9,142	1,413	17,074	7,120	66,779
2099	15,079	3,845	835	7,742	2,624	30,125
2100	2,729	619	366	10	4,857	8,582
2101	3,198	797	164	10	7,071	11,240
2102	98	0	0	0	562	660
2103	12	0	0	0	69	81
	293,127	59,197	19,984	51,779	119,809	543,896

TABLE 3.4b
McGUIRE NUCLEAR STATION, UNIT 1
SAFSTOR ALTERNATIVE
SPENT FUEL MANAGEMENT EXPENDITURES
(thousands, 2008 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2041	0	0	0	0	713	713
2042	301	28	10	0	1,326	1,665
2043	5,790	544	183	0	2,145	8,662
2044	5,806	546	184	0	2,151	8,686
2045	5,790	544	183	0	2,145	8,662
2046	5,790	544	183	0	2,145	8,662
2047	5,790	544	183	0	2,145	8,662
2048	5,806	546	184	0	2,151	8,686
2049	5,790	544	183	0	2,145	8,662
2050	5,790	544	183	0	2,145	8,662
2051	5,790	544	183	0	2,145	8,662
2052	5,806	546	184	0	2,151	8,686
2053	5,790	544	183	0	2,145	8,662
2054	5,790	544	183	0	2,145	8,662
2055	5,790	544	183	0	2,145	8,662
2056	2,488	227	45	0	662	3,422
2057	1,402	123	0	0	176	1,701
2058	1,402	123	0	0	176	1,701
2059	1,402	123	0	0	176	1,701
2060	1,406	123	0	0	177	1,706
2061	1,398	123	0	0	176	1,697
2062	0	0	0	0	0	0
2063	0	0	0	0	0	0
2064	0	0	0	0	0	0
2065	0	0	0	0	0	0
2066	0	0	0	0	0	0
2067	0	0	0	0	0	0
2068	0	0	0	0	0	0
2069	0	0	0	0	0	0
2070	0	0	0	0	0	0
2071	0	0	0	0	0	0
2072	0	0	0	0	0	0
2073	0	0	0	0	0	0

TABLE 3.4b (continued)
McGUIRE NUCLEAR STATION, UNIT 1
SAFSTOR ALTERNATIVE
SPENT FUEL MANAGEMENT EXPENDITURES
(thousands, 2008 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2074	0	0	0	0	0	0
2075	0	0	0	0	0	0
2076	0	0	0	0	0	0
2077	0	0	0	0	0	0
2078	0	0	0	0	0	0
2079	0	0	0	0	0	0
2080	0	0	0	0	0	0
2081	0	0	0	0	0	0
2082	0	0	0	0	0	0
2083	0	0	0	0	0	0
2084	0	0	0	0	0	0
2085	0	0	0	0	0	0
2086	0	0	0	0	0	0
2087	0	0	0	0	0	0
2088	0	0	0	0	0	0
2089	0	0	0	0	0	0
2090	0	0	0	0	0	0
2091	0	0	0	0	0	0
2092	0	0	0	0	0	0
2093	0	0	0	0	0	0
2094	0	0	0	0	0	0
2095	0	0	0	0	0	0
2096	0	0	0	0	0	0
2097	0	0	0	0	0	0
2098	0	0	0	0	0	0
2099	0	0	0	0	0	0
2100	0	0	0	0	0	0
2101	0	0	0	0	0	0
2102	0	0	0	0	0	0
2103	0	0	0	0	0	0
	85,111	7,951	2,437	0	31,482	126,981

TABLE 3.4c
McGUIRE NUCLEAR STATION, UNIT 1
SAFSTOR ALTERNATIVE
SITE RESTORATION EXPENDITURES
(thousands, 2008 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2041	0	0	0	0	0	0
2042	0	0	0	0	0	0
2043	0	0	0	0	0	0
2044	0	0	0	0	0	0
2045	0	0	0	0	0	0
2046	0	0	0	0	0	0
2047	0	0	0	0	0	0
2048	0	0	0	0	0	0
2049	0	0	0	0	0	0
2050	0	0	0	0	0	0
2051	0	0	0	0	0	0
2052	0	0	0	0	0	0
2053	0	0	0	0	0	0
2054	0	0	0	0	0	0
2055	0	0	0	0	0	0
2056	0	0	0	0	0	0
2057	0	0	0	0	0	0
2058	0	0	0	0	0	0
2059	0	0	0	0	0	0
2060	0	0	0	0	0	0
2061	0	0	0	0	0	0
2062	0	0	0	0	0	0
2063	0	0	0	0	0	0
2064	0	0	0	0	0	0
2065	0	0	0	0	0	0
2066	0	0	0	0	0	0
2067	0	0	0	0	0	0
2068	0	0	0	0	0	0
2069	0	0	0	0	0	0
2070	0	0	0	0	0	0
2071	0	0	0	0	0	0
2072	0	0	0	0	0	0
2073	0	0	0	0	0	0

TABLE 3.4c (continued)
McGUIRE NUCLEAR STATION, UNIT 1
SAFSTOR ALTERNATIVE
SITE RESTORATION EXPENDITURES
(thousands, 2008 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2074	0	0	0	0	0	0
2075	0	0	0	0	0	0
2076	0	0	0	0	0	0
2077	0	0	0	0	0	0
2078	0	0	0	0	0	0
2079	0	0	0	0	0	0
2080	0	0	0	0	0	0
2081	0	0	0	0	0	0
2082	0	0	0	0	0	0
2083	0	0	0	0	0	0
2084	0	0	0	0	0	0
2085	0	0	0	0	0	0
2086	0	0	0	0	0	0
2087	0	0	0	0	0	0
2088	0	0	0	0	0	0
2089	0	0	0	0	0	0
2090	0	0	0	0	0	0
2091	0	0	0	0	0	0
2092	0	0	0	0	0	0
2093	0	0	0	0	0	0
2094	0	0	0	0	0	0
2095	264	0	0	0	0	264
2096	1,143	13	0	0	0	1,157
2097	1,772	62	0	0	0	1,835
2098	2,364	63	0	0	0	2,427
2099	1,135	29	0	0	0	1,164
2100	0	0	0	0	0	0
2101	5,609	3,875	101	0	2	9,587
2102	10,134	7,002	183	0	3	17,323
2103	1,249	863	23	0	0	2,136
	23,671	11,909	307	0	6	35,893

TABLE 3.5
McGUIRE NUCLEAR STATION, UNIT 2
SAFSTOR ALTERNATIVE
SCHEDULE OF TOTAL ANNUAL EXPENDITURES
(thousands, 2008 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2043	22,538	1,041	1,525	25	6,888	32,017
2044	22,849	4,631	1,351	727	14,052	43,610
2045	4,752	889	366	20	2,892	8,919
2046	4,752	889	366	20	2,892	8,919
2047	4,752	889	366	20	2,892	8,919
2048	4,765	892	367	20	2,900	8,944
2049	4,752	889	366	20	2,892	8,919
2050	4,752	889	366	20	2,892	8,919
2051	4,752	889	366	20	2,892	8,919
2052	4,765	892	367	20	2,900	8,944
2053	4,752	889	366	20	2,892	8,919
2054	4,752	889	366	20	2,892	8,919
2055	4,752	889	366	20	2,892	8,919
2056	2,449	523	229	20	1,471	4,692
2057	1,690	401	183	19	1,003	3,297
2058	1,690	401	183	19	1,003	3,297
2059	1,690	401	183	19	1,003	3,297
2060	1,694	402	184	20	1,006	3,306
2061	1,689	401	183	19	1,002	3,294
2062	1,283	278	183	19	725	2,489
2063	1,283	278	183	19	725	2,489
2064	1,286	279	184	20	727	2,495
2065	1,283	278	183	19	725	2,489
2066	1,283	278	183	19	725	2,489
2067	1,283	278	183	19	725	2,489
2068	1,286	279	184	20	727	2,495
2069	1,283	278	183	19	725	2,489
2070	1,283	278	183	19	725	2,489
2071	1,283	278	183	19	725	2,489
2072	1,286	279	184	20	727	2,495
2073	1,283	278	183	19	725	2,489
2074	1,283	278	183	19	725	2,489
2075	1,283	278	183	19	725	2,489

TABLE 3.5 (continued)
McGUIRE NUCLEAR STATION, UNIT 2
SAFSTOR ALTERNATIVE
SCHEDULE OF TOTAL ANNUAL EXPENDITURES
(thousands, 2008 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2076	1,286	279	184	20	727	2,495
2077	1,283	278	183	19	725	2,489
2078	1,283	278	183	19	725	2,489
2079	1,283	278	183	19	725	2,489
2080	1,286	279	184	20	727	2,495
2081	1,283	278	183	19	725	2,489
2082	1,283	278	183	19	725	2,489
2083	1,283	278	183	19	725	2,489
2084	1,286	279	184	20	727	2,495
2085	1,283	278	183	19	725	2,489
2086	1,283	278	183	19	725	2,489
2087	1,283	278	183	19	725	2,489
2088	1,286	279	184	20	727	2,495
2089	1,283	278	183	19	725	2,489
2090	1,283	278	183	19	725	2,489
2091	1,283	278	183	19	725	2,489
2092	1,286	279	184	20	727	2,495
2093	1,283	278	183	19	725	2,489
2094	1,283	278	183	19	725	2,489
2095	1,283	278	183	19	725	2,489
2096	7,018	632	653	21	1,403	9,727
2097	21,462	2,597	1,831	26	2,985	28,901
2098	37,837	18,388	1,759	21,101	21,796	100,882
2099	44,035	12,458	1,459	20,135	11,891	89,978
2100	34,706	7,233	1,064	12,536	10,247	65,786
2101	13,890	8,444	265	11	7,897	30,507
2102	15,048	13,667	183	0	597	29,495
2103	1,855	1,685	23	0	74	3,636
	328,077	92,557	21,518	55,586	140,812	638,550

TABLE 3.5a
McGUIRE NUCLEAR STATION, UNIT 2
SAFSTOR ALTERNATIVE
LICENSE TERMINATION EXPENDITURES
(thousands, 2008 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2043	22,516	975	1,525	25	4,967	30,008
2044	21,615	4,181	1,290	727	12,219	40,032
2045	1,283	291	183	20	734	2,512
2046	1,283	291	183	20	734	2,512
2047	1,283	291	183	20	734	2,512
2048	1,286	292	184	20	736	2,519
2049	1,283	291	183	20	734	2,512
2050	1,283	291	183	20	734	2,512
2051	1,283	291	183	20	734	2,512
2052	1,286	292	184	20	736	2,519
2053	1,283	291	183	20	734	2,512
2054	1,283	291	183	20	734	2,512
2055	1,283	291	183	20	734	2,512
2056	1,286	282	184	20	736	2,508
2057	1,283	278	183	19	734	2,498
2058	1,283	278	183	19	734	2,498
2059	1,283	278	183	19	734	2,498
2060	1,286	279	184	20	736	2,504
2061	1,283	278	183	19	734	2,498
2062	1,283	278	183	19	725	2,489
2063	1,283	278	183	19	725	2,489
2064	1,286	279	184	20	727	2,495
2065	1,283	278	183	19	725	2,489
2066	1,283	278	183	19	725	2,489
2067	1,283	278	183	19	725	2,489
2068	1,286	279	184	20	727	2,495
2069	1,283	278	183	19	725	2,489
2070	1,283	278	183	19	725	2,489
2071	1,283	278	183	19	725	2,489
2072	1,286	279	184	20	727	2,495
2073	1,283	278	183	19	725	2,489
2074	1,283	278	183	19	725	2,489
2075	1,283	278	183	19	725	2,489

TABLE 3.5a (continued)
McGUIRE NUCLEAR STATION, UNIT 2
SAFSTOR ALTERNATIVE
LICENSE TERMINATION EXPENDITURES
(thousands, 2008 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2076	1,286	279	184	20	727	2,495
2077	1,283	278	183	19	725	2,489
2078	1,283	278	183	19	725	2,489
2079	1,283	278	183	19	725	2,489
2080	1,286	279	184	20	727	2,495
2081	1,283	278	183	19	725	2,489
2082	1,283	278	183	19	725	2,489
2083	1,283	278	183	19	725	2,489
2084	1,286	279	184	20	727	2,495
2085	1,283	278	183	19	725	2,489
2086	1,283	278	183	19	725	2,489
2087	1,283	278	183	19	725	2,489
2088	1,286	279	184	20	727	2,495
2089	1,283	278	183	19	725	2,489
2090	1,283	278	183	19	725	2,489
2091	1,283	278	183	19	725	2,489
2092	1,286	279	184	20	727	2,495
2093	1,283	278	183	19	725	2,489
2094	1,283	278	183	19	725	2,489
2095	1,283	278	183	19	725	2,489
2096	6,973	632	653	21	1,403	9,682
2097	21,187	2,597	1,831	26	2,985	28,626
2098	35,536	18,306	1,759	21,101	21,796	98,499
2099	40,759	12,146	1,459	19,901	10,762	85,027
2100	32,332	6,973	1,064	12,325	9,227	61,920
2101	5,585	881	164	11	7,878	14,518
2102	42	0	0	0	562	604
2103	5	0	0	0	69	75
	252,012	61,037	19,090	55,141	109,027	496,307

TABLE 3.5b
McGUIRE NUCLEAR STATION, UNIT 2
SAFSTOR ALTERNATIVE
SPENT FUEL MANAGEMENT EXPENDITURES
(thousands, 2008 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2043	22	66	0	0	1,171	1,260
2044	1,234	451	61	0	1,646	3,392
2045	3,469	598	183	0	2,118	6,368
2046	3,469	598	183	0	2,118	6,368
2047	3,469	598	183	0	2,118	6,368
2048	3,479	599	184	0	2,124	6,385
2049	3,469	598	183	0	2,118	6,368
2050	3,469	598	183	0	2,118	6,368
2051	3,469	598	183	0	2,118	6,368
2052	3,479	599	184	0	2,124	6,385
2053	3,469	598	183	0	2,118	6,368
2054	3,469	598	183	0	2,118	6,368
2055	3,469	598	183	0	2,118	6,368
2056	1,163	241	45	0	669	2,118
2057	407	123	0	0	194	724
2058	407	123	0	0	194	724
2059	407	123	0	0	194	724
2060	408	123	0	0	195	726
2061	406	123	0	0	194	723
2062	0	0	0	0	0	0
2063	0	0	0	0	0	0
2064	0	0	0	0	0	0
2065	0	0	0	0	0	0
2066	0	0	0	0	0	0
2067	0	0	0	0	0	0
2068	0	0	0	0	0	0
2069	0	0	0	0	0	0
2070	0	0	0	0	0	0
2071	0	0	0	0	0	0
2072	0	0	0	0	0	0
2073	0	0	0	0	0	0
2074	0	0	0	0	0	0
2075	0	0	0	0	0	0

TABLE 3.5b (continued)
McGUIRE NUCLEAR STATION, UNIT 2
SAFSTOR ALTERNATIVE
SPENT FUEL MANAGEMENT EXPENDITURES
(thousands, 2008 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2076	0	0	0	0	0	0
2077	0	0	0	0	0	0
2078	0	0	0	0	0	0
2079	0	0	0	0	0	0
2080	0	0	0	0	0	0
2081	0	0	0	0	0	0
2082	0	0	0	0	0	0
2083	0	0	0	0	0	0
2084	0	0	0	0	0	0
2085	0	0	0	0	0	0
2086	0	0	0	0	0	0
2087	0	0	0	0	0	0
2088	0	0	0	0	0	0
2089	0	0	0	0	0	0
2090	0	0	0	0	0	0
2091	0	0	0	0	0	0
2092	0	0	0	0	0	0
2093	0	0	0	0	0	0
2094	0	0	0	0	0	0
2095	0	0	0	0	0	0
2096	0	0	0	0	0	0
2097	0	0	0	0	0	0
2098	0	0	0	0	0	0
2099	285	224	0	234	919	1,661
2100	257	202	0	212	830	1,501
2101	201	540	0	0	16	757
2102	364	975	0	0	29	1,369
2103	45	120	0	0	4	169
	43,785	10,012	2,121	446	29,565	85,929

TABLE 3.5c
McGUIRE NUCLEAR STATION, UNIT 2
SAFSTOR ALTERNATIVE
SITE RESTORATION EXPENDITURES
(thousands, 2008 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2043	0	0	0	0	750	750
2044	0	0	0	0	187	187
2045	0	0	0	0	40	40
2046	0	0	0	0	40	40
2047	0	0	0	0	40	40
2048	0	0	0	0	40	40
2049	0	0	0	0	40	40
2050	0	0	0	0	40	40
2051	0	0	0	0	40	40
2052	0	0	0	0	40	40
2053	0	0	0	0	40	40
2054	0	0	0	0	40	40
2055	0	0	0	0	40	40
2056	0	0	0	0	66	66
2057	0	0	0	0	75	75
2058	0	0	0	0	75	75
2059	0	0	0	0	75	75
2060	0	0	0	0	75	75
2061	0	0	0	0	74	74
2062	0	0	0	0	0	0
2063	0	0	0	0	0	0
2064	0	0	0	0	0	0
2065	0	0	0	0	0	0
2066	0	0	0	0	0	0
2067	0	0	0	0	0	0
2068	0	0	0	0	0	0
2069	0	0	0	0	0	0
2070	0	0	0	0	0	0
2071	0	0	0	0	0	0
2072	0	0	0	0	0	0
2073	0	0	0	0	0	0
2074	0	0	0	0	0	0
2075	0	0	0	0	0	0

TABLE 3.5c (continued)
McGUIRE NUCLEAR STATION, UNIT 2
SAFSTOR ALTERNATIVE
SITE RESTORATION EXPENDITURES
(thousands, 2008 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2076	0	0	0	0	0	0
2077	0	0	0	0	0	0
2078	0	0	0	0	0	0
2079	0	0	0	0	0	0
2080	0	0	0	0	0	0
2081	0	0	0	0	0	0
2082	0	0	0	0	0	0
2083	0	0	0	0	0	0
2084	0	0	0	0	0	0
2085	0	0	0	0	0	0
2086	0	0	0	0	0	0
2087	0	0	0	0	0	0
2088	0	0	0	0	0	0
2089	0	0	0	0	0	0
2090	0	0	0	0	0	0
2091	0	0	0	0	0	0
2092	0	0	0	0	0	0
2093	0	0	0	0	0	0
2094	0	0	0	0	0	0
2095	0	0	0	0	0	0
2096	45	0	0	0	0	45
2097	275	0	0	0	0	275
2098	2,302	82	0	0	0	2,383
2099	2,991	89	0	0	210	3,289
2100	2,117	58	0	0	190	2,365
2101	8,103	7,024	101	0	3	15,231
2102	14,642	12,691	183	0	5	27,522
2103	1,805	1,565	23	0	1	3,393
	32,280	21,508	307	0	2,220	56,314

4. SCHEDULE ESTIMATE

The schedules for the decommissioning scenarios considered in this study follow the sequences presented in the AIF/NESP-036 study, with minor changes to reflect recent experience and site-specific constraints. In addition, the scheduling has been revised to reflect the spent fuel management plan described in Section 3.5.1.

A schedule or sequence of activities for the DECON alternative from shutdown ISFSI site restoration is presented in Figure 4.1. The scheduling sequence is based on the fuel being removed from the spent fuel pools within thirteen years. The key activities listed in the schedule do not reflect a one-to-one correspondence with those activities in the cost tables, but reflect dividing some activities for clarity and combining others for convenience. The schedule was prepared using the "Microsoft Project Professional 2003" computer software.[29]

4.1 SCHEDULE ESTIMATE ASSUMPTIONS

The schedule reflects the results of a precedence network developed for the site decommissioning activities, i.e., a PERT (Program Evaluation and Review Technique) Software Package. The work activity durations used in the precedence network reflect the actual man-hour estimates from the cost table, adjusted by stretching certain activities over their slack range and shifting the start and end dates of others. The following assumptions were made in the development of the decommissioning schedule:

- The Fuel Building is isolated until such time that all spent fuel has been discharged from the spent fuel pools to the DOE. Decontamination and dismantling of the storage pools is initiated once the transfer of spent fuel is complete (DECON option).
- All work (except vessel and internals removal) is performed during an 8-hour workday, 5 days per week, with no overtime. There are eleven paid holidays per year.
- Reactor and internals removal activities are performed by using separate crews for different activities working on different shifts, with a corresponding backshift charge for the second shift.
- Multiple crews work parallel activities to the maximum extent possible, consistent with optimum efficiency, adequate access for cutting, removal and laydown space, and with the stringent safety measures necessary during demolition of heavy components and structures.

- For plant systems removal, the systems with the longest removal durations in areas on the critical path are considered to determine the duration of the activity.

4.2 PROJECT SCHEDULE

The period-dependent costs presented in the detailed cost tables are based upon the durations developed in the schedules for decommissioning. Durations are established between several milestones in each project period; these durations are used to establish a critical path for the entire project. In turn, the critical path duration for each period is used as the basis for determining the period-dependent costs. A second critical path is shown for the spent fuel storage period, which determines the release of the Fuel Building for final decontamination.

Project timelines are provided in Figures 4.2 and 4.3 with milestone dates based on the 2041 and 2043 shutdown dates for Units 1 and 2, respectively. The fuel pools are emptied approximately thirteen years after shutdown, while ISFSI operations continue until the DOE can complete the transfer of assemblies to its geologic repository. Deferred decommissioning in the SAFSTOR scenarios is assumed to commence so that the operating licenses are terminated within a 60-year period from the cessation of plant operations.

FIGURE 4.1
ACTIVITY SCHEDULE

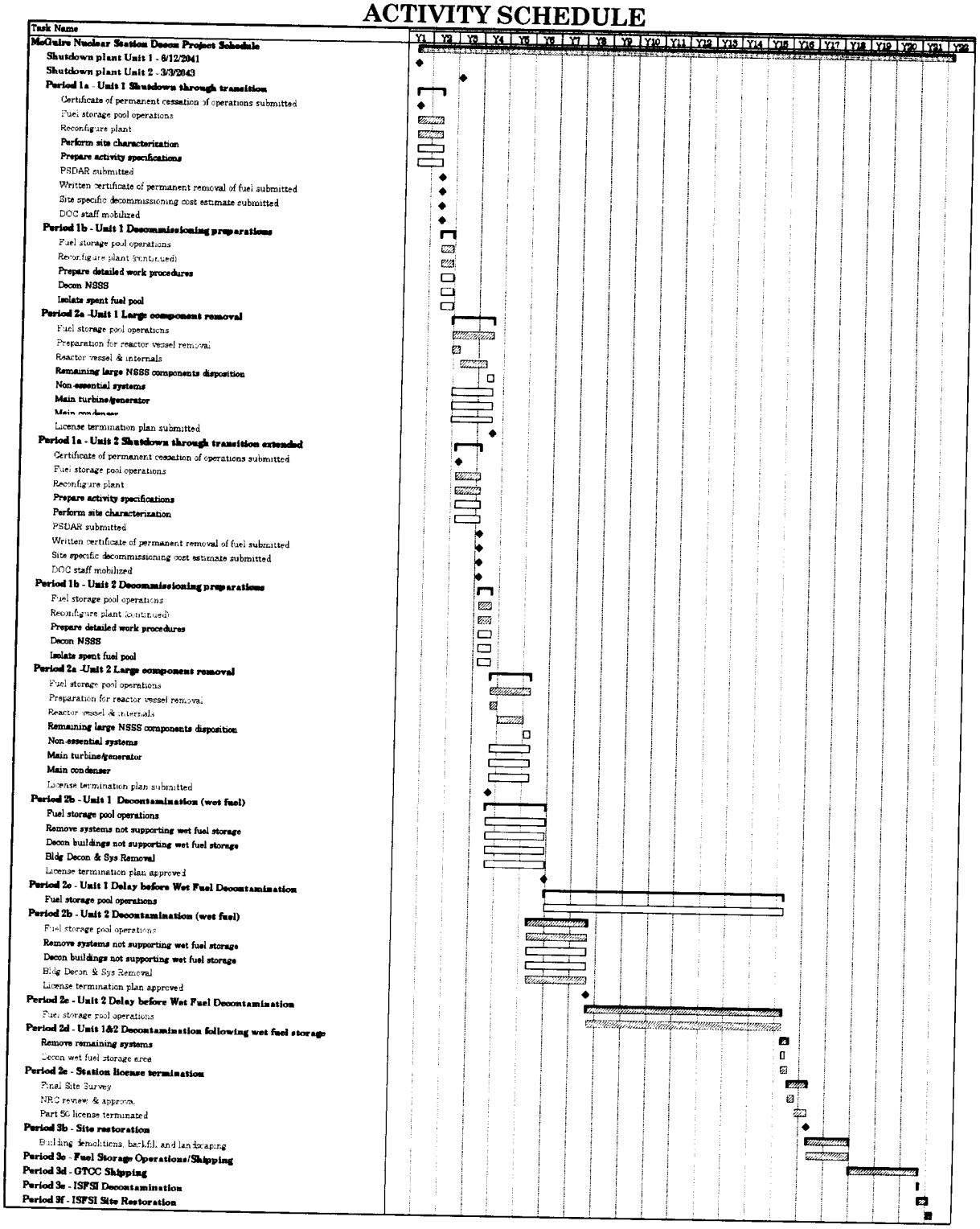

FIGURE 4.1 (continued)
ACTIVITY SCHEDULE
LEGEND

Legend:

1. Red text and/or shaded scheduling bars indicate critical path activities

2. Shaded scheduling bars associated with major decommissioning periods, e.g., Period 1a, indicate overall duration of that period

3. Blue text and/or diamond symbols indicate major milestones

FIGURE 4.2
DECOMMISSIONING TIMELINE
DECON

MCGUIRE NUCLEAR STATION
DECON

Shutdown and Decommisioning Preparation → Prompt Decommissioning DECON → Site Restoration → Post - Decommissioning ISFSI Operations → ISFSI Decon and Demolition

Unit 1

Periods	1a	1b	2a	2b	2c	2d	2e	3b	3c	3d			End
Start Dates	12-Jun-41	14-Jun-42	19-Dec-42	29-Jul-44	14-Dec-46	31-Mar-56	20-Jul-56	21-Apr-57	24-Dec-58	17-Dec-61			31-Dec-61
Durations (Years)	1.0	0.5	1.6	2.4	9.3	0.3	0.8	1.7	3.0	0.04			
Elapsed Time (Years)		1.5	3.1	5.5	14.8	15.1	15.9	17.5	20.5	20.6			

Unit 2

Periods	1a	1b	2a	2b	2c	2d	2e	3b	3c	3d	3e	3f	End
Start Dates	03-Mar-43	04-Mar-44	08-Sep-44	29-Dec-45	30-Aug-48	31-Mar-56	20-Jul-56	21-Apr-57	24-Dec-58	17-Dec-61	31-Dec-61	03-May-62	03-Jul-62
Durations (Years)	1.0	0.5	1.3	2.7	7.6	0.3	0.8	1.7	3.0	0.04	0.3	0.2	
Elapsed Time (Years)		1.5	2.8	5.5	13.1	13.4	14.1	15.8	18.8	18.8	19.2	19.3	

MNS Spent Fuel Schedule

MNS Pool (DOE Cask Loaded)			5	19	97							121	Total
MNS ISFSI (Cask to DOE)						3	10	18	36			67	Total

Note: Cask distribution is provided as a general representation of inventory per period, totals per period are not actuals as used to calculate costs.

FIGURE 4.3
DECOMMISSIONING TIMELINE
SAFSTOR

MCGUIRE NUCLEAR STATION
SAFSTOR

Shutdown and Decommissioning Preparation → Preparations for Safe-Storage → Wet & Dry & No Fuel Dormancy → Delayed Decommissioning SAFSTOR → Site Restoration

Unit 1

Periods	1a	1b	1c	2a	2b	2c	3a	3b	4a	4b	4d	4e	5b	End
Start Dates	12-Jun-41	12-Jun-42	12-Sep-42	13-Dec-42	31-Mar-56	31-Dec-61	16-Apr-95	15-Apr-96	15-Oct-96	10-Feb-98	20-Jun-99	11-Sep-00	13-Jun-01	15-Feb-03
Durations (Years)	1.0	0.3	0.3	13.3	5.8	33.3	1.0	0.5	1.3	1.4	1.2	0.8	1.7	
Elapsed Time (Years)		1.3	1.5	14.8	20.6	53.8	54.8	55.3	56.7	58.0	59.2	60.0	61.7	

Unit 2

Periods	1a	1b	1c	2a	2b	2c	3a	3b	4a	4b		4e	5b	End
Start Dates	03-Mar-43	02-Mar-44	02-Jun-44	02-Sep-44	31-Mar-56	31-Dec-61	19-Sep-96	19-Sep-97	21-Mar-98	27-Mar-99		11-Sep-00	13-Jun-01	15-Feb-03
Durations (Years)	1.0	0.3	0.3	11.6	5.8	34.7	1.0	0.5	1.0	1.5		0.8	1.7	
Elapsed Time (Years)		1.3	1.5	13.1	18.8	53.5	54.5	55.0	56.1	57.5		58.3	60.0	

MNS Spent Fuel Schedule

MNS Pool (DOE Cask Loaded)	121	121	Total
MNS ISFSI (Cask to DOE)	67	67	Total

Note: Cask distribution is provided as a general representation of inventory per period, totals per period are not actuals as used to calculate costs.

5. RADIOACTIVE WASTES

The objectives of the decommissioning process are the removal of all radioactive material from the site that would restrict its future use and the termination of the NRC license. This currently requires the remediation of all radioactive material at the site in excess of applicable legal limits. Under the Atomic Energy Act,[30] the NRC is responsible for protecting the public from sources of ionizing radiation. Title 10 of the Code of Federal Regulations delineates the production, utilization, and disposal of radioactive materials and processes. In particular, Part 71 defines radioactive material as it pertains to transportation and Part 61 specifies its disposition.

Most of the materials being transported for controlled burial are categorized as Low Specific Activity (LSA) or Surface Contaminated Object (SCO) materials containing Type A quantities, as defined in 49 CFR Parts 173-178. Shipping containers are required to be Industrial Packages (IP-1, IP-2 or IP-3, as defined in 10 CFR §173.411). For this study, commercially available steel containers are presumed to be used for the disposal of piping, small components, and concrete. Larger components can serve as their own containers, with proper closure of all openings, access ways, and penetrations.

The volumes of radioactive waste generated during the various decommissioning activities at the site are shown on a line-item basis in Appendices C and D, and summarized in Tables 5.1 and 5.2. The quantified waste volume summaries shown in these tables are consistent with Part 61 classifications. The volumes are calculated based on the exterior dimensions for containerized material and on the displaced volume of components serving as their own waste containers.

The reactor vessel and internals are categorized as large quantity shipments and, accordingly, will be shipped in reusable, shielded truck casks with disposable liners. In calculating disposal costs, the burial fees are applied against the liner volume, as well as the special handling requirements of the payload. Packaging efficiencies are lower for the highly activated materials (greater than Type A quantity waste), where high concentrations of gamma-emitting radionuclides limit the capacity of the shipping canisters.

No process system containing/handling radioactive substances at shutdown is presumed to meet material release criteria by decay alone (i.e., systems radioactive at shutdown will still be radioactive over the time period during which the decommissioning is accomplished, due to the presence of long-lived radionuclides). While the dose rates decrease with time, radionuclides such as ^{137}Cs will still control the disposition requirements.

The waste material produced in the decontamination and dismantling of the nuclear plants is primarily generated during Period 2 of DECON and Period 4 of SAFSTOR. Material that is considered potentially contaminated when removed from the radiological controlled area is sent to processing facilities in Tennessee for conditioning and disposal. Heavily contaminated components and activated materials are routed for controlled disposal. The disposal volumes reported in the tables reflect the savings resulting from reprocessing and recycling.

For purposes of constructing the estimates, the cost for disposal at the EnergySolutions and Barnwell facilities were used as a proxy for future disposal facilities. Separate rates were used for containerized waste and large components, including the steam generators and reactor coolant pump motors. Demolition debris including miscellaneous steel, scaffolding, and concrete was disposed of at a bulk rate. The decommissioning waste stream also included resins and dry active waste.

Since EnergySolutions is not currently able to receive the more highly radioactive components generated in the decontamination and dismantling of the reactor, disposal costs for the Class B and C material were based upon the last published rate schedule for non-compact waste for the Barnwell facility (as a proxy). Additional surcharges were included for activity, dose rate, and/or handling added as appropriate for the particular package.

TABLE 5.1
UNIT 1 DECON ALTERNATIVE
DECOMMISSIONING WASTE SUMMARY

Waste	Cost Basis	Class [1]	Waste Volume (cubic feet)	Mass (pounds)
Low-Level Radioactive Waste (near-surface disposal)	EnergySolutions	A	100,962	8,648,808
	Barnwell	B	3,687	477,266
	Barnwell	C	459	48,192
Greater than Class C (geologic repository)	Spent Fuel Equivalent	GTCC	666	129,800
Processed/Conditioned (off-site recycling center)	Recycling Vendors	A	211,084	9,041,773
Total [2]			316,858	18,345,840

[1] Waste is classified according to the requirements as delineated in Title 10 CFR, Part 61.55

[2] Columns may not add due to rounding.

TABLE 5.2
UNIT 2 DECON ALTERNATIVE
DECOMMISSIONING WASTE SUMMARY

Waste	Cost Basis	Class [1]	Waste Volume (cubic feet)	Mass (pounds)
Low-Level Radioactive Waste (near-surface disposal)	EnergySolutions	A	113,356	10,081,548
	Barnwell	B	3,687	477,266
	Barnwell	C	459	48,192
Greater than Class C (geologic repository)	Spent Fuel Equivalent	GTCC	666	129,800
Processed/Conditioned (off-site recycling center)	Recycling Vendors	A	239,466	10,208,570
Total [2]			357,634	20,945,376

[1] Waste is classified according to the requirements as delineated in Title 10 CFR, Part 61.55

[2] Columns may not add due to rounding.

TABLE 5.3
UNIT 1 SAFSTOR ALTERNATIVE
DECOMMISSIONING WASTE SUMMARY

Waste	Cost Basis	Class [1]	Waste Volume (cubic feet)	Mass (pounds)
Low-Level Radioactive Waste (near-surface disposal)	EnergySolutions	A	104,370	7,846,550
	Barnwell	B	3,080	314,050
	Barnwell	C	470	47,502
Greater than Class C (geologic repository)	Spent Fuel Equivalent	GTCC	666	129,800
Processed/Conditioned (off-site recycling center)	Recycling Vendors	A	228,204	9,791,135
Total [2]			336,790	18,129,037

[1] Waste is classified according to the requirements as delineated in Title 10 CFR, Part 61.55

[2] Columns may not add due to rounding.

TABLE 5.4
UNIT 2 SAFSTOR ALTERNATIVE
DECOMMISSIONING WASTE SUMMARY

Waste	Cost Basis	Class [1]	Waste Volume (cubic feet)	Mass (pounds)
Low-Level Radioactive Waste (near-surface disposal)	EnergySolutions	A	116,445	9,311,665
	Barnwell	B	3,080	314,050
	Barnwell	C	470	47,502
Greater than Class C (geologic repository)	Spent Fuel Equivalent	GTCC	666	129,800
Processed/Conditioned (off-site recycling center)	Recycling Vendors	A	255,652	10,920,030
Total [2]			376,313	20,723,047

[1] Waste is classified according to the requirements as delineated in Title 10 CFR, Part 61.55

[2] Columns may not add due to rounding.

6. RESULTS

The analysis to estimate the costs to decommission McGuire relied upon the site-specific, technical information developed for a previous analysis prepared in 2003. While not an engineering study, the estimates provide Duke Energy with sufficient information to assess their financial obligations, as they pertain to the eventual decommissioning of the nuclear station.

The estimates described in this report are based on numerous fundamental assumptions, including regulatory requirements, project contingencies, low-level radioactive waste disposal practices, high-level radioactive waste management options, and site restoration requirements. The decommissioning scenarios assume continued operation of the station's spent fuel pools for a minimum of thirteen years following the cessation of operations for continued cooling of the assemblies.

The cost projected to promptly decommission (DECON) McGuire is estimated to be $1,187.2 million. The majority of this cost (approximately 73.9%) is associated with the physical decontamination and dismantling of the nuclear plant so that the operating license can be terminated. Another 19.8% is associated with the management, interim storage, and eventual transfer of the spent fuel. The remaining 6.3% is for the demolition of the designated structures and limited restoration of the site.

The cost projected for deferred decommissioning (SAFSTOR) is estimated to be $1,345.3 million. The majority of this cost (approximately 77.3%) is associated with placing the plant in storage, ongoing caretaking of the plant during dormancy, and the eventual physical decontamination and dismantling of the nuclear plant so that the operating license can be terminated. Another 15.8% is associated with the management, interim storage, and eventual transfer of the spent fuel. The remaining 6.9% is for the demolition of the designated structures and limited restoration of the site.

The primary cost contributors, identified in Tables 6.1 thru 6.4, are either labor-related or associated with the management and disposition of the radioactive waste. Program management is the largest single contributor to the overall cost. The magnitude of the expense is a function of both the size of the organization required to manage the decommissioning, as well as the duration of the program. It is assumed, for purposes of this analysis, that Duke Energy will oversee the decommissioning program, acting as the DOC to manage the decommissioning labor force and the associated subcontractors. The size and composition of the management organization varies with the decommissioning phase and associated site activities. However, once the operating license is terminated, the staff is

substantially reduced for the conventional demolition and restoration of the site, and the long-term care of the spent fuel (for the DECON alternative).

As described in this report, the spent fuel pools will remain operational for a minimum of thirteen years following the cessation of operations. The pools will be isolated and an independent spent fuel island created. This will allow decommissioning operations to proceed in and around the pool area. Over the thirteen-year period, the spent fuel will be packaged into transportable canisters for loading into a DOE-provided transport cask. Spent fuel will also be in storage at the ISFSI (from operations). This inventory will be transferred to the DOE after the pools are emptied.

The cost for waste disposal includes only those costs associated with the controlled disposition of the low-level radioactive waste generated from decontamination and dismantling activities, including plant equipment and components, structural material, filters, resins and dry-active waste. As described in Section 5, disposition of the majority of the low-level radioactive material requiring controlled disposal is at the EnergySolutions' facility. Highly activated components, requiring additional isolation from the environment (GTCC), are packaged for geologic disposal. The cost of geologic disposal is based upon a cost equivalent for spent fuel.

A significant portion of the metallic waste is designated for additional processing and treatment at an off-site facility. Processing reduces the volume of material requiring controlled disposal through such techniques and processes as survey and sorting, decontamination, and volume reduction. The material that cannot be unconditionally released is packaged for controlled disposal at one of the currently operating facilities. The cost identified in the summary tables for processing is all-inclusive, incorporating the ultimate disposition of the material.

Removal costs reflect the labor-intensive nature of the decommissioning process, as well as the management controls required to ensure a safe and successful program. Decontamination and packaging costs also have a large labor component that is based upon prevailing union wages. Non-radiological demolition is a natural extension of the decommissioning process. The methods employed in decontamination and dismantling are generally destructive and indiscriminate in inflicting collateral damage. With a work force mobilized to support decommissioning operations, non-radiological demolition can be an integrated activity and a logical expansion of the work being performed in the process of terminating the operating license. Prompt demolition reduces future liabilities and can be more cost effective than deferral, due to the deterioration of the facilities (and therefore the working conditions) with time.

The reported cost for transport includes the tariffs and surcharges associated with moving large components and/or overweight shielded casks overland, as well as the general expense, e.g., labor and fuel, of transporting material to the destinations identified in this report. For purposes of this analysis, material is primarily moved overland by truck.

Decontamination is used to reduce the plant's radiation fields and minimize worker exposure. Slightly contaminated material or material located within a contaminated area is sent to an off-site processing center, i.e., this analysis does not assume that contaminated plant components and equipment can be decontaminated for uncontrolled release in-situ. Centralized processing centers have proven to be a more economical means of handling the large volumes of material produced in the dismantling of a nuclear plant.

License termination survey costs are associated with the labor intensive and complex activity of verifying that contamination has been removed from the site to the levels specified by the regulating agency. This process involves a systematic survey of all remaining plant surface areas and surrounding environs, sampling, isotopic analysis, and documentation of the findings. The status of any plant components and materials not removed in the decommissioning process will also require confirmation and will add to the expense of surveying the facilities alone.

The remaining costs include allocations for heavy equipment and temporary services, as well as for other expenses such as regulatory fees and the premiums for nuclear insurance. While site operating costs are greatly reduced following the final cessation of plant operations, certain administrative functions do need to be maintained either at a basic functional or regulatory level.

TABLE 6.1
UNIT 1 DECON ALTERNATIVE
DECOMMISSIONING COST ELEMENTS
(thousands of 2008 dollars)

Cost Element	Total	Percentage
Decontamination	13,001	2.3
Removal	86,144	15.2
Packaging	17,274	3.1
Transportation	11,397	2.0
Waste Disposal	59,302	10.5
Off-site Waste Processing	23,292	4.1
Program Management [1]	233,677	41.4
Utility Site Indirect	20,742	3.7
Spent Fuel Pool Isolation	10,819	1.9
Spent Fuel Management [2]	29,402	5.2
Insurance and Regulatory Fees	17,178	3.0
Energy	14,008	2.5
Characterization and Licensing Surveys	15,353	2.7
Property Taxes	6,944	1.2
Miscellaneous Equipment	6,515	1.2
Total [3]	565,046	100

Cost Element	Total	Percentage
License Termination	428,787	75.9
Spent Fuel Management	109,380	19.4
Site Restoration	26,879	4.7
Total [3]	565,046	100

[1] Includes engineering and security costs
[2] Excludes program management costs (staffing) but includes costs for spent fuel loading/transfer costs/spent fuel pool O&M and EP fees
[3] Columns may not add due to rounding

TABLE 6.2
UNIT 2 DECON ALTERNATIVE
DECOMMISSIONING COST ELEMENTS
(thousands of 2008 dollars)

Cost Element	Total	Percentage
Decontamination	12,415	2.0
Removal	115,713	18.6
Packaging	17,357	2.8
Transportation	11,512	1.9
Waste Disposal	59,696	9.6
Off-site Waste Processing	26,378	4.2
Program Management [1]	254,867	41.0
Utility Site Indirect	22,539	3.6
Spent Fuel Pool Isolation	7,212	1.2
Spent Fuel Management [2]	34,245	5.5
Insurance and Regulatory Fees	15,867	2.6
Energy	13,900	2.2
Characterization and Licensing Surveys	14,350	2.3
Property Taxes	7,368	1.2
Miscellaneous Equipment	6,515	1.0
Miscellaneous Site Services	2,211	0.4
Total [3]	622,146	100

Cost Element	Total	Percentage
License Termination	447,859	72.0
Spent Fuel Management	126,079	20.3
Site Restoration	48,207	7.7
Total [3]	622,146	100

[1] Includes engineering and security costs
[2] Excludes program management costs (staffing) but includes costs for spent fuel loading/transfer costs/spent fuel pool O&M and EP fees
[3] Columns may not add due to rounding

TABLE 6.3
UNIT 1 SAFSTOR ALTERNATIVE
DECOMMISSIONING COST ELEMENTS
(thousands of 2008 dollars)

Cost Element	Total	Percentage
Decontamination	10,287	1.5
Removal	84,675	12.0
Packaging	13,309	1.9
Transportation	8,583	1.2
Waste Disposal	43,533	6.2
Off-site Waste Processing	25,222	3.6
Program Management [1]	343,965	48.7
Utility Site Indirect	28,830	4.1
Spent Fuel Pool Isolation	10,819	1.5
Spent Fuel Management [2]	29,893	4.2
Insurance and Regulatory Fees	44,775	6.3
Energy	22,728	3.2
Characterization and Licensing Surveys	16,804	2.4
Property Taxes	7,017	1.0
Miscellaneous Equipment	16,331	2.3
Total [3]	706,770	100

Cost Element	Total	Percentage
License Termination	543,896	77.0
Spent Fuel Management	126,981	18.0
Site Restoration	35,893	5.0
Total [3]	706,770	100

[1] Includes engineering and security costs
[2] Excludes program management costs (staffing) but includes costs for spent fuel loading/transfer costs/spent fuel pool O&M and EP fees
[3] Columns may not add due to rounding

TABLE 6.4
UNIT 2 SAFSTOR ALTERNATIVE
DECOMMISSIONING COST ELEMENTS
(thousands of 2008 dollars)

Cost Element	Total	Percentage
Decontamination	11,396	1.8
Removal	112,644	17.6
Packaging	13,428	2.1
Transportation	9,122	1.4
Waste Disposal	44,351	6.9
Off-site Waste Processing	28,211	4.4
Program Management [1]	253,548	39.7
Utility Site Indirect	19,998	3.1
Spent Fuel Pool Isolation	7,212	1.1
Spent Fuel Management [2]	31,537	4.9
Insurance and Regulatory Fees	41,845	6.6
Energy	21,518	3.4
Characterization and Licensing Surveys	15,801	2.5
Property Taxes	7,436	1.2
Miscellaneous Equipment	18,293	2.9
Miscellaneous Site Services	2,211	0.3
Total [3]	638,550	100

Cost Element	Total	Percentage
License Termination	496,307	77.7
Spent Fuel Management	85,929	13.5
Site Restoration	56,314	8.8
Total [3]	638,550	100

[1] Includes engineering and security costs
[2] Excludes program management costs (staffing) but includes costs for spent fuel loading/transfer costs/spent fuel pool O&M and EP fees
[3] Columns may not add due to rounding

7. REFERENCES

1. "Decommissioning Cost Analysis for the McGuire Nuclear Station," Document No. D03-1478-003, Rev. 0, TLG Services, Inc., November 2003

2. U.S. Code of Federal Regulations, Title 10, Parts 30, 40, 50, 51, 70 and 72, "General Requirements for Decommissioning Nuclear Facilities," Nuclear Regulatory Commission, Federal Register Volume 53, Number 123 (p 24018 et seq.), June 27, 1988

3. U.S. Nuclear Regulatory Commission, Regulatory Guide 1.159, "Assuring the Availability of Funds for Decommissioning Nuclear Reactors," October 2003

4. U.S. Code of Federal Regulations, Title 10, Part 20, Subpart E, "Radiological Criteria for License Termination"

5. U.S. Code of Federal Regulations, Title 10, Parts 20 and 50, "Entombment Options for Power Reactors," Advanced Notice of Proposed Rulemaking, Federal Register Volume 66, Number 200, October 16, 2001

6. U.S. Code of Federal Regulations, Title 10, Parts 2, 50 and 51, "Decommissioning of Nuclear Power Reactors," Nuclear Regulatory Commission, Federal Register Volume 61 (p 39278 et seq.), July 29, 1996.

7. "Nuclear Waste Policy Act of 1982 and Amendments," U.S. Department of Energy's Office of Civilian Radioactive Management, 1982

8. "DOE Announces Yucca Mountain License Application Schedule", U.S. Department of Energy's Office of Public Affairs, Press Release July 19, 2006

9. U.S. Code of Federal Regulations, Title 10, Part 50, "Domestic Licensing of Production and Utilization Facilities," Subpart 54 (bb), "Conditions of Licenses"

10. "Low Level Radioactive Waste Policy Act," Public Law 96-573, 1980

11. "Low-Level Radioactive Waste Policy Amendments Act of 1985," Public Law 99-240, 1986

12. Waste is classified in accordance with U.S. Code of Federal Regulations, Title 10, Part 61.55

7. REFERENCES
(continued)

13. U.S. Code of Federal Regulations, Title 10, Part 20, Subpart E, "Radiological Criteria for License Termination," Federal Register, Volume 62, Number 139 (p 39058 et seq.), July 21, 1997

14. "Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination," EPA Memorandum OSWER No. 9200.4-18, August 22, 1997.

15. U.S. Code of Federal Regulations, Title 40, Part 141.16, "Maximum contaminant levels for beta particle and photon radioactivity from man-made radionuclides in community water systems"

16. "Memorandum of Understanding Between the Environmental Protection Agency and the Nuclear Regulatory Commission: Consultation and Finality on Decommissioning and Decontamination of Contaminated Sites," OSWER 9295.8-06a, October 9, 2002

17. "Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)," NUREG/CR-1575, Rev. 1, EPA 402-R-97-016, Rev. 1, August 2000

18. T.S. LaGuardia et al., "Guidelines for Producing Commercial Nuclear Power Plant Decommissioning Cost Estimates," AIF/NESP-036, May 1986

19. W.J. Manion and T.S. LaGuardia, "Decommissioning Handbook," U.S. Department of Energy, DOE/EV/10128-1, November 1980

20. "Building Construction Cost Data 2008," Robert Snow Means Company, Inc., Kingston, Massachusetts

21. Project and Cost Engineers' Handbook, Second Edition, p. 239, American Association of Cost Engineers, Marcel Dekker, Inc., New York, New York, 1984

22. Civilian Radioactive Waste Management System Waste Acceptance System Requirements Document, Revision 5" (DOE/RW-0351) issued May 31, 2007

23. U.S. Department of Transportation, Title 49 of the Code of Federal Regulations, "Transportation," Parts 173 through 178, 2007

7. REFERENCES
(continued)

24. Tri-State Motor Transit Company, published tariffs, Interstate Commerce Commission (ICC), Docket No. MC-427719 Rules Tariff, March 2004, Radioactive Materials Tariff, February 2006

25. J.C. Evans et al., "Long-Lived Activation Products in Reactor Materials" NUREG/CR-3474, Pacific Northwest Laboratory for the Nuclear Regulatory Commission. August 1984

26. R.I. Smith, G.J. Konzek, W.E. Kennedy, Jr., "Technology, Safety and Costs of Decommissioning a Reference Pressurized Water Reactor Power Station," NUREG/CR-0130 and addenda, Pacific Northwest Laboratory for the Nuclear Regulatory Commission. June 1978

27. H.D. Oak, et al., "Technology, Safety and Costs of Decommissioning a Reference Boiling Water Reactor Power Station," NUREG/CR-0672 and addenda, Pacific Northwest Laboratory for the Nuclear Regulatory Commission. June 1980

28. "Financial Protection Requirements for Permanently Shutdown Nuclear Power Reactors," 10 CFR Parts 50 and 140, Federal Register Notice, Vol. 62, No. 210, October 30, 1997

29. "Microsoft Project Professional 2003," Microsoft Corporation, Redmond, WA.

30. "Atomic Energy Act of 1954," (68 Stat. 919)

APPENDIX A

UNIT COST FACTOR DEVELOPMENT

APPENDIX A
UNIT COST FACTOR DEVELOPMENT

Example: Unit Factor for Removal of Contaminated Heat Exchanger < 3,000 lbs.

1. SCOPE

Heat exchangers weighing < 3,000 lbs. will be removed in one piece using a crane or small hoist. They will be disconnected from the inlet and outlet piping. The heat exchanger will be sent to the waste processing area.

2. CALCULATIONS

Act ID	Activity Description	Activity Duration (minutes)	Critical Duration (minutes)*
a	Remove insulation	60	(b)
b	Mount pipe cutters	60	60
c	Install contamination controls	20	(b)
d	Disconnect inlet and outlet lines	60	60
e	Cap openings	20	(d)
f	Rig for removal	30	30
g	Unbolt from mounts	30	30
h	Remove contamination controls	15	15
i	Remove, wrap, send to waste processing area	60	60
	Totals (Activity/Critical)	355	255

Duration adjustment(s):	
+ Respiratory protection adjustment (50% of critical duration)	128
+ Radiation/ALARA adjustment (37% of critical duration)	95
Adjusted work duration	478
+ Protective clothing adjustment (30% of adjusted duration)	143
Productive work duration	621
+ Work break adjustment (8.33 % of productive duration)	52
Total work duration (minutes)	673

***** Total duration = 11.217 hr *****

* alpha designators indicate activities that can be performed in parallel

APPENDIX A
(continued)

3. LABOR REQUIRED

Crew	Number	Duration (hours)	Rate ($/hr)	Cost
Laborers	3.00	11.217	$**.**	$***.**
Craftsmen	2.00	11.217	$**.**	$****.**
Foreman	1.00	11.217	$**.**	$***.**
General Foreman	0.25	11.217	$**.**	$***.**
Fire Watch	0.05	11.217	$**.**	$**.**
Health Physics Technician	1.00	11.217	$**.**	$***.**
Total Labor Cost				$3,101.67

4. EQUIPMENT & CONSUMABLES COSTS

Equipment Costs	none
Consumables/Materials Costs	
-Blotting paper 50 @ $0.55 sq ft [1]	$27.50
-Plastic sheets/bags 50 @ $0.16/sq ft [2]	$8.00
-Gas torch consumables 1 @ $9.88/hr x 1 hr [3]	$9.88
Subtotal cost of equipment and materials	$45.38
Overhead & profit on equipment and materials @ 17.00 %	$7.83
Total costs, equipment & material	$53.21

TOTAL COST:

Removal of contaminated **heat exchanger <3000 pounds:**	**$3,154.88**
Total labor cost:	$3,101.67
Total equipment/material costs:	$53.21
Total craft labor man-hours required per unit:	81.88

** denotes business sensitive information

5. NOTES AND REFERENCES

- Work difficulty factors were developed in conjunction with the Atomic Industrial Forum's (now NEI) program to standardize nuclear decommissioning cost estimates and are delineated in Volume 1, Chapter 5 of the "Guidelines for Producing Commercial Nuclear Power Plant Decommissioning Cost Estimates," AIF/NESP-036, May 1986.

- References for equipment & consumables costs:

  1. McMaster-Carr, Item 7193T88, Spill Control
  2. R.S. Means (2008) Division 01 56, Section 13.60-0200, page 20
  3. R.S. Means (2008) Division 01 54 33, Section 40-6360, Reference-10

- Material and consumable costs were adjusted using the regional indices for Charlotte, North Carolina.

APPENDIX B

UNIT COST FACTOR LISTING
(DECON: Power Block Structures Only)

APPENDIX B

UNIT COST FACTOR LISTING
(Power Block Structures Only)

Unit Cost Factor	Cost/Unit($)
Removal of clean instrument and sampling tubing, $/linear foot	0.31
Removal of clean pipe 0.25 to 2 inches diameter, $/linear foot	3.16
Removal of clean pipe >2 to 4 inches diameter, $/linear foot	4.69
Removal of clean pipe >4 to 8 inches diameter, $/linear foot	9.81
Removal of clean pipe >8 to 14 inches diameter, $/linear foot	18.36
Removal of clean pipe >14 to 20 inches diameter, $/linear foot	23.88
Removal of clean pipe >20 to 36 inches diameter, $/linear foot	35.14
Removal of clean pipe >36 inches diameter, $/linear foot	41.74
Removal of clean valve >2 to 4 inches	63.90
Removal of clean valve >4 to 8 inches	98.10
Removal of clean valve >8 to 14 inches	183.62
Removal of clean valve >14 to 20 inches	238.83
Removal of clean valve >20 to 36 inches	351.37
Removal of clean valve >36 inches	417.43
Removal of clean pipe hanger for small bore piping	20.89
Removal of clean pipe hanger for large bore piping	71.50
Removal of clean pump, <300 pound	165.60
Removal of clean pump, 300-1000 pound	475.04
Removal of clean pump, 1000-10,000 pound	1,851.80
Removal of clean pump, >10,000 pound	3,581.56
Removal of clean pump motor, 300-1000 pound	199.24
Removal of clean pump motor, 1000-10,000 pound	770.54
Removal of clean pump motor, >10,000 pound	1,733.71
Removal of clean heat exchanger <3000 pound	996.07
Removal of clean heat exchanger >3000 pound	2,507.65
Removal of clean feedwater heater/deaerator	7,057.11
Removal of clean moisture separator/reheater	14,492.80
Removal of clean tank, <300 gallons	213.02
Removal of clean tank, 300-3000 gallon	671.44
Removal of clean tank, >3000 gallons, $/square foot surface area	5.83

APPENDIX B

UNIT COST FACTOR LISTING
(Power Block Structures Only)

Unit Cost Factor	Cost/Unit($)
Removal of clean electrical equipment, <300 pound	90.08
Removal of clean electrical equipment, 300-1000 pound	324.39
Removal of clean electrical equipment, 1000-10,000 pound	648.77
Removal of clean electrical equipment, >10,000 pound	1,564.83
Removal of clean electrical transformer < 30 tons	1,086.75
Removal of clean electrical transformer > 30 tons	3,129.67
Removal of clean standby diesel generator, <100 kW	1,110.04
Removal of clean standby diesel generator, 100 kW to 1 MW	2,477.65
Removal of clean standby diesel generator, >1 MW	5,129.25
Removal of clean electrical cable tray, $/linear foot	8.44
Removal of clean electrical conduit, $/linear foot	3.69
Removal of clean mechanical equipment, <300 pound	90.08
Removal of clean mechanical equipment, 300-1000 pound	324.39
Removal of clean mechanical equipment, 1000-10,000 pound	648.77
Removal of clean mechanical equipment, >10,000 pound	1,564.83
Removal of clean HVAC equipment, <300 pound	90.08
Removal of clean HVAC equipment, 300-1000 pound	324.39
Removal of clean HVAC equipment, 1000-10,000 pound	648.77
Removal of clean HVAC equipment, >10,000 pound	1,564.83
Removal of clean HVAC ductwork, $/pound	0.33
Removal of contaminated instrument and sampling tubing, $/linear foot	1.11
Removal of contaminated pipe 0.25 to 2 inches diameter, $/linear foot	15.18
Removal of contaminated pipe >2 to 4 inches diameter, $/linear foot	25.86
Removal of contaminated pipe >4 to 8 inches diameter, $/linear foot	43.17
Removal of contaminated pipe >8 to 14 inches diameter, $/linear foot	82.32
Removal of contaminated pipe >14 to 20 inches diameter, $/linear foot	98.64
Removal of contaminated pipe >20 to 36 inches diameter, $/linear foot	136.02
Removal of contaminated pipe >36 inches diameter, $/linear foot	160.52
Removal of contaminated valve >2 to 4 inches	327.29
Removal of contaminated valve >4 to 8 inches	394.62

APPENDIX B

UNIT COST FACTOR LISTING
(Power Block Structures Only)

Unit Cost Factor	Cost/Unit($)
Removal of contaminated valve >8 to 14 inches	781.59
Removal of contaminated valve >14 to 20 inches	991.69
Removal of contaminated valve >20 to 36 inches	1,318.52
Removal of contaminated valve >36 inches	1,563.58
Removal of contaminated pipe hanger for small bore piping	78.70
Removal of contaminated pipe hanger for large bore piping	244.17
Removal of contaminated pump, <300 pound	704.23
Removal of contaminated pump, 300-1000 pound	1,643.87
Removal of contaminated pump, 1000-10,000 pound	5,148.66
Removal of contaminated pump, >10,000 pound	12,538.29
Removal of contaminated pump motor, 300-1000 pound	706.63
Removal of contaminated pump motor, 1000-10,000 pound	2,105.42
Removal of contaminated pump motor, >10,000 pound	4,726.99
Removal of contaminated heat exchanger <3000 pound	3,154.88
Removal of contaminated heat exchanger >3000 pound	9,163.11
Removal of contaminated tank, <300 gallons	1,172.71
Removal of contaminated tank, >300 gallons, $/square foot	22.95
Removal of contaminated electrical equipment, <300 pound	541.22
Removal of contaminated electrical equipment, 300-1000 pound	1,324.26
Removal of contaminated electrical equipment, 1000-10,000 pound	2,549.72
Removal of contaminated electrical equipment, >10,000 pound	5,009.17
Removal of contaminated electrical cable tray, $/linear foot	26.11
Removal of contaminated electrical conduit, $/linear foot	12.19
Removal of contaminated mechanical equipment, <300 pound	602.47
Removal of contaminated mechanical equipment, 300-1000 pound	1,463.75
Removal of contaminated mechanical equipment, 1000-10,000 pound	2,813.75
Removal of contaminated mechanical equipment, >10,000 pound	5,009.17
Removal of contaminated HVAC equipment, <300 pound	602.47
Removal of contaminated HVAC equipment, 300-1000 pound	1,463.75
Removal of contaminated HVAC equipment, 1000-10,000 pound	2,813.75

APPENDIX B

UNIT COST FACTOR LISTING
(Power Block Structures Only)

Unit Cost Factor	Cost/Unit($)
Removal of contaminated HVAC equipment, >10,000 pound	5,009.17
Removal of contaminated HVAC ductwork, $/pound	1.67
Removal/plasma arc cut of contaminated thin metal components, $/linear in.	2.84
Additional decontamination of surface by washing, $/square foot	5.71
Additional decontamination of surfaces by hydrolasing, $/square foot	28.21
Decontamination rig hook up and flush, $/ 250 foot length	5,105.27
Chemical flush of components/systems, $/gallon	15.74
Removal of clean standard reinforced concrete, $/cubic yard	110.45
Removal of grade slab concrete, $/cubic yard	140.72
Removal of clean concrete floors, $/cubic yard	295.18
Removal of sections of clean concrete floors, $/cubic yard	854.01
Removal of clean heavily rein concrete w/#9 rebar, $/cubic yard	202.72
Removal of contaminated heavily rein concrete w/#9 rebar, $/cubic yard	1,693.44
Removal of clean heavily rein concrete w/#18 rebar, $/cubic yard	256.38
Removal of contaminated heavily rein concrete w/#18 rebar, $/cubic yard	2,240.63
Removal heavily rein concrete w/#18 rebar & steel embedments, $/cubic yard	377.80
Removal of below-grade suspended floors, $/cubic yard	295.18
Removal of clean monolithic concrete structures, $/cubic yard	712.66
Removal of contaminated monolithic concrete structures, $/cubic yard	1,689.50
Removal of clean foundation concrete, $/cubic yard	561.24
Removal of contaminated foundation concrete, $/cubic yard	1,574.38
Explosive demolition of bulk concrete, $/cubic yard	25.56
Removal of clean hollow masonry block wall, $/cubic yard	72.37
Removal of contaminated hollow masonry block wall, $/cubic yard	262.19
Removal of clean solid masonry block wall, $/cubic yard	72.37
Removal of contaminated solid masonry block wall, $/cubic yard	262.19
Backfill of below-grade voids, $/cubic yard	16.34
Removal of subterranean tunnels/voids, $/linear foot	86.66
Placement of concrete for below-grade voids, $/cubic yard	139.48
Excavation of clean material, $/cubic yard	2.67

APPENDIX B

UNIT COST FACTOR LISTING
(Power Block Structures Only)

Unit Cost Factor	Cost/Unit($)
Excavation of contaminated material, $/cubic yard	36.12
Removal of clean concrete rubble (tipping fee included), $/cubic yard	21.16
Removal of contaminated concrete rubble, $/cubic yard	21.69
Removal of building by volume, $/cubic foot	0.26
Removal of clean building metal siding, $/square foot	0.76
Removal of contaminated building metal siding, $/square foot	3.05
Removal of standard asphalt roofing, $/square foot	1.45
Removal of transite panels, $/square foot	1.68
Scarifying contaminated concrete surfaces (drill & spall), $/square foot	11.97
Scabbling contaminated concrete floors, $/square foot	6.36
Scabbling contaminated concrete walls, $/square foot	16.01
Scabbling contaminated ceilings, $/square foot	54.20
Scabbling structural steel, $/square foot	5.52
Removal of clean overhead crane/monorail < 10 ton capacity	472.58
Removal of contaminated overhead crane/monorail < 10 ton capacity	1,421.46
Removal of clean overhead crane/monorail >10-50 ton capacity	1,134.20
Removal of contaminated overhead crane/monorail >10-50 ton capacity	3,410.90
Removal of polar crane > 50 ton capacity	4,785.69
Removal of gantry crane > 50 ton capacity	19,560.45
Removal of structural steel, $/pound	0.17
Removal of clean steel floor grating, $/square foot	3.59
Removal of contaminated steel floor grating, $/square foot	10.82
Removal of clean free standing steel liner, $/square foot	8.74
Removal of contaminated free standing steel liner, $/square foot	26.78
Removal of clean concrete-anchored steel liner, $/square foot	4.37
Removal of contaminated concrete-anchored steel liner, $/square foot	31.21
Placement of scaffolding in clean areas, $/square foot	14.87
Placement of scaffolding in contaminated areas, $/square foot	22.64
Landscaping with topsoil, $/acre	23,739.56
Cost of CPC B-88 LSA box & preparation for use	1,756.26

APPENDIX B

UNIT COST FACTOR LISTING
(Power Block Structures Only)

Unit Cost Factor	Cost/Unit($)
Cost of CPC B-25 LSA box & preparation for use	1,541.26
Cost of CPC B-12V 12 gauge LSA box & preparation for use	1,508.71
Cost of CPC B-144 LSA box & preparation for use	9,482.15
Cost of LSA drum & preparation for use	125.96
Cost of cask liner for CNSI 8 120A cask (resins)	7,113.81
Decontamination of surfaces with vacuuming, $/square foot	0.50

APPENDIX C

DETAILED COST ANALYSIS

DECON

Table C-1
McGuire Nuclear Station - Unit 1
DECON Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 1a - Shutdown through Transition																					
Period 1a Direct Decommissioning Activities																					
1a.1.1	Prepare preliminary decommissioning cost	-	-	-	-	-	-	88	13	101	101	-	-	-	-	-	-	-	-	-	1,300
1a.1.2	Notification of Cessation of Operations									a											
1a.1.3	Remove fuel & source material									n/a											
1a.1.4	Notification of Permanent Defueling									a											
1a.1.5	Deactivate plant systems & process waste									a											
1a.1.6	Prepare and submit PSDAR	-	-	-	-	-	-	135	20	156	156	-	-	-	-	-	-	-	-	-	2,000
1a.1.7	Review plant dwgs & specs.	-	-	-	-	-	-	311	47	358	358	-	-	-	-	-	-	-	-	-	4,600
1a.1.8	Perform detailed rad survey									a											
1a.1.9	Estimate by-product inventory	-	-	-	-	-	-	68	10	78	78	-	-	-	-	-	-	-	-	-	1,000
1a.1.10	End product description	-	-	-	-	-	-	68	10	78	78	-	-	-	-	-	-	-	-	-	1,000
1a.1.11	Detailed by-product inventory	-	-	-	-	-	-	88	13	101	101	-	-	-	-	-	-	-	-	-	1,300
1a.1.12	Define major work sequence	-	-	-	-	-	-	507	76	583	583	-	-	-	-	-	-	-	-	-	7,500
1a.1.13	Perform SER and EA	-	-	-	-	-	-	210	31	241	241	-	-	-	-	-	-	-	-	-	3,100
1a.1.14	Perform Site-Specific Cost Study	-	-	-	-	-	-	338	51	389	389	-	-	-	-	-	-	-	-	-	5,000
1a.1.15	Prepare/submit License Termination Plan	-	-	-	-	-	-	277	42	319	319	-	-	-	-	-	-	-	-	-	4,096
1a.1.16	Receive NRC approval of termination plan									a											
Activity Specifications																					
1a.1.17.1	Plant & temporary facilities	-	-	-	-	-	-	333	50	383	344	-	38	-	-	-	-	-	-	-	4,920
1a.1.17.2	Plant systems	-	-	-	-	-	-	282	42	324	292	-	32	-	-	-	-	-	-	-	4,167
1a.1.17.3	NSSS Decontamination Flush	-	-	-	-	-	-	34	5	39	39	-	-	-	-	-	-	-	-	-	500
1a.1.17.4	Reactor internals	-	-	-	-	-	-	480	72	552	552	-	-	-	-	-	-	-	-	-	7,100
1a.1.17.5	Reactor vessel	-	-	-	-	-	-	440	66	506	506	-	-	-	-	-	-	-	-	-	6,500
1a.1.17.6	Biological shield	-	-	-	-	-	-	34	5	39	39	-	-	-	-	-	-	-	-	-	500
1a.1.17.7	Steam generators	-	-	-	-	-	-	211	32	243	243	-	-	-	-	-	-	-	-	-	3,120
1a.1.17.8	Reinforced concrete	-	-	-	-	-	-	108	16	124	62	-	62	-	-	-	-	-	-	-	1,600
1a.1.17.9	Main Turbine	-	-	-	-	-	-	27	4	31	-	-	31	-	-	-	-	-	-	-	400
1a.1.17.10	Main Condensers	-	-	-	-	-	-	27	4	31	-	-	31	-	-	-	-	-	-	-	400
1a.1.17.11	Plant structures & buildings	-	-	-	-	-	-	211	32	243	121	-	121	-	-	-	-	-	-	-	3,120
1a.1.17.12	Waste management	-	-	-	-	-	-	311	47	358	358	-	-	-	-	-	-	-	-	-	4,600
1a.1.17.13	Facility & site closeout	-	-	-	-	-	-	61	9	70	35	-	35	-	-	-	-	-	-	-	900
1a.1.17	Total	-	-	-	-	-	-	2,558	384	2,942	2,591	-	351	-	-	-	-	-	-	-	37,827
Planning & Site Preparations																					
1a.1.18	Prepare dismantling sequence	-	-	-	-	-	-	162	24	187	187	-	-	-	-	-	-	-	-	-	2,400
1a.1.19	Plant prep. & temp. svces	-	-	-	-	-	-	2,700	405	3,105	3,105	-	-	-	-	-	-	-	-	-	-
1a.1.20	Design water clean-up system	-	-	-	-	-	-	95	14	109	109	-	-	-	-	-	-	-	-	-	1,400
1a.1.21	Rigging/Cont. Cntrl Envlps/tooling/etc.	-	-	-	-	-	-	2,100	315	2,415	2,415	-	-	-	-	-	-	-	-	-	-
1a.1.22	Procure casks/liners & containers	-	-	-	-	-	-	83	12	96	96	-	-	-	-	-	-	-	-	-	1,230
1a.1	Subtotal Period 1a Activity Costs	-	-	-	-	-	-	9,788	1,468	11,256	10,905	-	351	-	-	-	-	-	-	-	73,753
Period 1a Period-Dependent Costs																					
1a.4.1	Insurance	-	-	-	-	-	-	1,070	107	1,177	1,177	-	-	-	-	-	-	-	-	-	-
1a.4.2	Property taxes	-	-	-	-	-	-	1,389	139	1,528	1,528	-	-	-	-	-	-	-	-	-	-
1a.4.3	Health physics supplies	-	455	-	-	-	-	-	114	568	568	-	-	-	-	-	-	-	-	-	-
1a.4.4	Heavy equipment rental	-	462	-	-	-	-	-	69	532	532	-	-	-	-	-	-	-	-	-	-
1a.4.5	Disposal of DAW generated	-	-	10	2	-	26	-	8	46	46	-	-	-	619	-	-	-	12,378	23	-
1a.4.6	Plant energy budget	-	-	-	-	-	-	1,601	240	1,841	1,841	-	-	-	-	-	-	-	-	-	-
1a.4.7	NRC Fees	-	-	-	-	-	-	710	71	781	781	-	-	-	-	-	-	-	-	-	-
1a.4.8	Emergency Planning Fees	-	-	-	-	-	-	388	39	426	-	426	-	-	-	-	-	-	-	-	-
1a.4.9	FEMA Fees	-	-	-	-	-	-	195	29	224	224	-	-	-	-	-	-	-	-	-	-
1a.4.10	Spent Fuel Pool O&M	-	-	-	-	-	-	750	112	862	-	862	-	-	-	-	-	-	-	-	-
1a.4.11	Indirect Overhead	-	-	-	-	-	-	2,691	404	3,095	3,095	-	-	-	-	-	-	-	-	-	-

Table C-1
McGuire Nuclear Station - Unit 1
DECON Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes: Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 1a Period-Dependent Costs (continued)																					
1a.4.12	Security Staff Cost	-	-	-	-	-	-	1,196	179	1,375	1,375	-	-	-	-	-	-	-	-	-	46,934
1a.4.13	Utility Staff Cost	-	-	-	-	-	-	24,007	3,601	27,608	27,608	-	-	-	-	-	-	-	-	-	436,206
1a.4	Subtotal Period 1a Period-Dependent Costs	-	917	10	2	-	26	33,996	5,112	40,063	38,775	1,288	-	-	619	-	-	-	12,378	23	483,140
1a.0	TOTAL PERIOD 1a COST	-	917	10	2	-	26	43,784	6,581	51,320	49,680	1,288	351	-	619	-	-	-	12,378	23	556,892
PERIOD 1b - Decommissioning Preparations																					
Period 1b Direct Decommissioning Activities																					
Detailed Work Procedures																					
1b.1.1.1	Plant systems	-	-	-	-	-	-	320	48	368	331	-	37	-	-	-	-	-	-	-	4,733
1b.1.1.2	NSSS Decontamination Flush	-	-	-	-	-	-	68	10	78	78	-	-	-	-	-	-	-	-	-	1,000
1b.1.1.3	Reactor internals	-	-	-	-	-	-	169	25	194	194	-	-	-	-	-	-	-	-	-	2,500
1b.1.1.4	Remaining buildings	-	-	-	-	-	-	91	14	105	26	-	79	-	-	-	-	-	-	-	1,350
1b.1.1.5	CRD cooling assembly	-	-	-	-	-	-	68	10	78	78	-	-	-	-	-	-	-	-	-	1,000
1b.1.1.6	CRD housings & ICI tubes	-	-	-	-	-	-	68	10	78	78	-	-	-	-	-	-	-	-	-	1,000
1b.1.1.7	Incore instrumentation	-	-	-	-	-	-	68	10	78	78	-	-	-	-	-	-	-	-	-	1,000
1b.1.1.8	Reactor vessel	-	-	-	-	-	-	245	37	282	282	-	-	-	-	-	-	-	-	-	3,630
1b.1.1.9	Facility closeout	-	-	-	-	-	-	81	12	93	47	-	47	-	-	-	-	-	-	-	1,200
1b.1.1.10	Missile shields	-	-	-	-	-	-	30	5	35	35	-	-	-	-	-	-	-	-	-	450
1b.1.1.11	Biological shield	-	-	-	-	-	-	81	12	93	93	-	-	-	-	-	-	-	-	-	1,200
1b.1.1.12	Steam generators	-	-	-	-	-	-	311	47	358	358	-	-	-	-	-	-	-	-	-	4,600
1b.1.1.13	Reinforced concrete	-	-	-	-	-	-	68	10	78	39	-	39	-	-	-	-	-	-	-	1,000
1b.1.1.14	Main Turbine	-	-	-	-	-	-	106	16	121	-	-	121	-	-	-	-	-	-	-	1,560
1b.1.1.15	Main Condensers	-	-	-	-	-	-	106	16	121	-	-	121	-	-	-	-	-	-	-	1,560
1b.1.1.16	Auxiliary building	-	-	-	-	-	-	185	28	212	191	-	21	-	-	-	-	-	-	-	2,730
1b.1.1.17	Reactor building	-	-	-	-	-	-	185	28	212	191	-	21	-	-	-	-	-	-	-	2,730
1b.1.1	Total	-	-	-	-	-	-	2,248	337	2,585	2,099	-	486	-	-	-	-	-	-	-	33,243
1b.1.2	Decon primary loop	511	-	-	-	-	-	-	255	766	766	-	-	-	-	-	-	-	-	1,067	-
1b.1	Subtotal Period 1b Activity Costs	511	-	-	-	-	-	2,248	593	3,351	2,865	-	486	-	-	-	-	-	-	1,067	33,243
Period 1b Additional Costs																					
1b.2.1	Spent Fuel Pool Isolation	-	-	-	-	-	-	9,407	1,411	10,819	10,819	-	-	-	-	-	-	-	-	-	-
1b.2.2	Site Characterization	-	-	-	-	-	-	2,935	881	3,816	3,816	-	-	-	-	-	-	-	-	19,100	7,852
1b.2	Subtotal Period 1b Additional Costs	-	-	-	-	-	-	12,342	2,292	14,634	14,634	-	-	-	-	-	-	-	-	19,100	7,852
Period 1b Collateral Costs																					
1b.3.1	Decon equipment	878	-	-	-	-	-	-	132	1,010	1,010	-	-	-	-	-	-	-	-	-	-
1b.3.2	Process liquid waste	29	-	55	374	-	2,336	-	660	3,454	3,454	-	-	-	184	750	-	-	94,286	182	-
1b.3.3	Small tool allowance	-	1	-	-	-	-	-	0	1	1	-	-	-	-	-	-	-	-	-	-
1b.3.4	Pipe cutting equipment	-	1,000	-	-	-	-	-	150	1,150	1,150	-	-	-	-	-	-	-	-	-	-
1b.3.5	Decon rig	1,400	-	-	-	-	-	-	210	1,610	1,610	-	-	-	-	-	-	-	-	-	-
1b.3	Subtotal Period 1b Collateral Costs	2,307	1,001	55	374	-	2,336	-	1,152	7,226	7,226	-	-	-	184	750	-	-	94,286	182	-
Period 1b Period-Dependent Costs																					
1b.4.1	Decon supplies	28	-	-	-	-	-	-	7	35	35	-	-	-	-	-	-	-	-	-	-
1b.4.2	Insurance	-	-	-	-	-	-	548	55	603	603	-	-	-	-	-	-	-	-	-	-
1b.4.3	Property taxes	-	-	-	-	-	-	711	71	783	783	-	-	-	-	-	-	-	-	-	-
1b.4.4	Health physics supplies	-	257	-	-	-	-	-	64	322	322	-	-	-	-	-	-	-	-	-	-
1b.4.5	Heavy equipment rental	-	237	-	-	-	-	-	36	272	272	-	-	-	-	-	-	-	-	-	-
1b.4.6	Disposal of DAW generated	-	-	6	1	-	15	-	5	27	27	-	-	-	364	-	-	-	7,285	13	-
1b.4.7	Plant energy budget	-	-	-	-	-	-	1,640	246	1,886	1,886	-	-	-	-	-	-	-	-	-	-
1b.4.8	NRC Fees	-	-	-	-	-	-	363	36	400	400	-	-	-	-	-	-	-	-	-	-

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Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 1b Period-Dependent Costs (continued)																					
1b.4.9	Emergency Planning Fees	-	-	-	-	-	-	199	20	218	-	218	-	-	-	-	-	-	-	-	-
1b.4.10	FEMA Fees	-	-	-	-	-	-	100	15	115	115	-	-	-	-	-	-	-	-	-	-
1b.4.11	Spent Fuel Pool O&M	-	-	-	-	-	-	384	58	442	-	442	-	-	-	-	-	-	-	-	-
1b.4.12	Indirect Overhead	-	-	-	-	-	-	1,723	259	1,982	1,982	-	-	-	-	-	-	-	-	-	24,043
1b.4.13	Security Staff Cost	-	-	-	-	-	-	613	92	705	705	-	-	-	-	-	-	-	-	-	279,314
1b.4.14	Utility Staff Cost	-	-	-	-	-	-	15,680	2,352	18,032	18,032	-	-	-	-	-	-	-	-	-	303,357
1b.4	Subtotal Period 1b Period-Dependent Costs	28	494	6	1	-	15	21,961	3,314	25,820	25,160	660	-	-	364	-	-	-	7,285	13	303,357
1b.0	TOTAL PERIOD 1b COST	2,845	1,495	62	375	-	2,351	36,552	7,351	51,031	49,885	660	486	-	549	750	-	-	101,571	20,362	344,452
PERIOD 1 TOTALS		2,845	2,412	72	377	-	2,377	80,336	13,931	102,351	99,565	1,948	838	-	1,168	750	-	-	113,949	20,385	901,344
PERIOD 2a - Large Component Removal																					
Period 2a Direct Decommissioning Activities																					
Nuclear Steam Supply System Removal																					
2a.1.1.1	Reactor Coolant Piping	206	192	21	47	-	330	-	243	1,039	1,039	-	-	-	1,250	-	-	-	151,190	9,198	-
2a.1.1.2	Pressurizer Relief Tank	25	21	6	12	-	80	-	40	183	183	-	-	-	329	-	-	-	36,553	1,072	-
2a.1.1.3	Reactor Coolant Pumps & Motors	76	69	39	153	143	1,210	-	406	2,096	2,096	-	-	272	4,708	-	-	-	888,360	3,772	-
2a.1.1.4	Pressurizer	39	45	351	334	-	992	-	364	2,126	2,126	-	-	-	3,860	-	-	-	240,508	2,487	-
2a.1.1.5	Steam Generators	329	2,606	2,654	3,023	2,302	4,777	-	3,075	18,767	18,767	-	-	21,655	18,589	-	-	-	3,569,235	23,227	3,750
2a.1.1.6	CRDMs/ICIs/Service Structure Removal	126	66	198	72	-	151	-	148	761	761	-	-	-	3,396	-	-	-	69,259	4,166	-
2a.1.1.7	Reactor Vessel Internals	130	2,256	6,863	1,419	-	5,494	244	6,611	23,017	23,017	-	-	-	2,754	683	459	-	341,105	30,783	1,363
2a.1.1.8	Reactor Vessel	75	4,184	1,627	1,039	-	7,694	244	7,726	22,589	22,589	-	-	-	6,320	2,254	-	-	937,367	30,783	1,363
2a.1.1	Totals	1,006	9,439	11,761	6,099	2,445	20,728	488	18,612	70,578	70,578	-	-	21,927	41,207	2,937	459	-	6,233,578	105,489	6,477
Removal of Major Equipment																					
2a.1.2	Main Turbine/Generator	-	373	315	23	882	478	-	380	2,452	2,452	-	-	4,633	2,580	-	-	-	625,275	9,309	-
2a.1.3	Main Condensers	-	1,136	163	81	733	419	-	527	3,061	3,061	-	-	7,274	2,145	-	-	-	519,770	29,171	-
Cascading Costs from Clean Building Demolition																					
2a.1.4.1	Reactor Building	-	477	-	-	-	-	-	72	548	548	-	-	-	-	-	-	-	-	7,048	-
2a.1.4.2	AB-Aux FW Pump/Pntrtn Rm/Swtchgr Rm	-	55	-	-	-	-	-	8	63	63	-	-	-	-	-	-	-	-	747	-
2a.1.4.3	Auxiliary Building	-	182	-	-	-	-	-	27	210	210	-	-	-	-	-	-	-	-	2,609	-
2a.1.4.4	Main Steam Doghouses	-	48	-	-	-	-	-	7	55	55	-	-	-	-	-	-	-	-	603	-
2a.1.4.5	Fuel Building	-	55	-	-	-	-	-	8	64	64	-	-	-	-	-	-	-	-	790	-
2a.1.4	Totals	-	817	-	-	-	-	-	123	940	940	-	-	-	-	-	-	-	-	11,798	-
Disposal of Plant Systems																					
2a.1.5.1	Auxiliary Feedwater	-	328	16	29	1,094	-	-	252	1,719	1,719	-	-	12,031	-	-	-	-	488,570	8,123	-
2a.1.5.2	Auxiliary Fuel Oil	-	3	-	-	-	-	-	0	3	-	-	3	-	-	-	-	-	-	83	-
2a.1.5.3	Auxiliary Steam	-	21	-	-	-	-	-	3	24	-	-	24	-	-	-	-	-	-	628	-
2a.1.5.4	Auxiliary Steam RCA	-	110	2	3	102	-	-	43	260	260	-	-	1,125	-	-	-	-	45,675	2,670	-
2a.1.5.5	Cond Circ Water Intake Screen Bkwash	-	5	-	-	-	-	-	1	6	-	-	6	-	-	-	-	-	-	140	-
2a.1.5.6	Condensate	-	373	-	-	-	-	-	56	429	-	-	429	-	-	-	-	-	-	11,171	-
2a.1.5.7	Condensate Storage	-	86	-	-	-	-	-	13	99	-	-	99	-	-	-	-	-	-	2,338	-
2a.1.5.8	Condenser Circulating Water	-	133	-	-	-	-	-	20	153	-	-	153	-	-	-	-	-	-	4,041	-
2a.1.5.9	Condenser Cleaning	-	18	-	-	-	-	-	3	20	-	-	20	-	-	-	-	-	-	552	-
2a.1.5.10	Condenser Steam Air Ejector	-	54	-	-	-	-	-	8	62	-	-	62	-	-	-	-	-	-	1,697	-
2a.1.5.11	Containment Spray	-	119	4	6	247	-	-	68	444	444	-	-	2,715	-	-	-	-	110,271	2,830	-
2a.1.5.12	Conventional Chemical Addition	-	10	-	-	-	-	-	1	11	-	-	11	-	-	-	-	-	-	302	-
2a.1.5.13	Conventional Chemical Addition RCA	-	19	0	0	15	-	-	7	42	42	-	-	167	-	-	-	-	6,783	405	-
2a.1.5.14	Conventional LP Service Water	-	59	-	-	-	-	-	9	68	-	-	68	-	-	-	-	-	-	1,822	-
2a.1.5.15	DG Engine Air Intake & Exhaust	-	2	-	-	-	-	-	0	3	-	-	3	-	-	-	-	-	-	68	-
2a.1.5.16	DG Engine Cooling Water	-	29	-	-	-	-	-	4	33	-	-	33	-	-	-	-	-	-	844	-

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Disposal of Plant Systems (continued)																					
2a.1.5.17	DG Engine Crankcase Vacuum	-	2	-	-	-	-	-	0	2	-	-	2	-	-	-	-	-	-	55	-
2a.1.5.18	DG Engine Fuel Oil	-	45	-	-	-	-	-	7	52	-	-	52	-	-	-	-	-	-	1,322	-
2a.1.5.19	DG Engine Lube Oil	-	38	-	-	-	-	-	6	44	-	-	44	-	-	-	-	-	-	1,155	-
2a.1.5.20	DG Engine Starting Air	-	24	-	-	-	-	-	4	28	-	-	28	-	-	-	-	-	-	755	-
2a.1.5.21	DG Room Sump Pump	-	26	-	-	-	-	-	4	30	-	-	30	-	-	-	-	-	-	739	-
2a.1.5.22	FW Lube & Hydraulic Oil	-	21	-	-	-	-	-	3	24	-	-	24	-	-	-	-	-	-	644	-
2a.1.5.23	FW Pump Turbine Steam Seal	-	5	-	-	-	-	-	1	5	-	-	5	-	-	-	-	-	-	148	-
2a.1.5.24	Feedwater	-	214	-	-	-	-	-	32	246	-	-	246	-	-	-	-	-	-	6,048	-
2a.1.5.25	Feedwater Pump Condensate Seal	-	22	-	-	-	-	-	3	25	-	-	25	-	-	-	-	-	-	681	-
2a.1.5.26	Feedwater RCA	-	88	4	6	244	-	-	60	402	402	-	-	2,686	-	-	-	-	109,061	2,169	-
2a.1.5.27	Generator Hydrogen	-	15	-	-	-	-	-	2	17	-	-	17	-	-	-	-	-	-	459	-
2a.1.5.28	Generator Seal Oil	-	8	-	-	-	-	-	1	9	-	-	9	-	-	-	-	-	-	254	-
2a.1.5.29	Generator Stator Cooling Water	-	20	-	-	-	-	-	3	23	-	-	23	-	-	-	-	-	-	608	-
2a.1.5.30	Heater Bleed Steam	-	70	-	-	-	-	-	10	80	-	-	80	-	-	-	-	-	-	2,187	-
2a.1.5.31	Heater Drains	-	197	-	-	-	-	-	29	226	-	-	226	-	-	-	-	-	-	5,982	-
2a.1.5.32	Heater Relief Valve	-	16	-	-	-	-	-	2	19	-	-	19	-	-	-	-	-	-	487	-
2a.1.5.33	Heater Vent	-	32	-	-	-	-	-	5	37	-	-	37	-	-	-	-	-	-	1,059	-
2a.1.5.34	MS Reheater Bleed Steam	-	29	-	-	-	-	-	4	34	-	-	34	-	-	-	-	-	-	930	-
2a.1.5.35	MS Steam Vent to Atmosphere	-	129	3	6	224	-	-	67	430	430	-	-	2,467	-	-	-	-	100,173	3,196	-
2a.1.5.36	Main Steam	-	18	-	-	-	-	-	3	21	-	-	21	-	-	-	-	-	-	569	-
2a.1.5.37	Main Steam Bypass to Condenser	-	33	-	-	-	-	-	5	38	-	-	38	-	-	-	-	-	-	1,001	-
2a.1.5.38	Main Steam RCA	-	31	1	2	59	-	-	17	109	109	-	-	647	-	-	-	-	26,288	729	-
2a.1.5.39	Main Turbine LO & Purification	-	77	-	-	-	-	-	12	88	-	-	88	-	-	-	-	-	-	2,277	-
2a.1.5.40	Main Turbine Leakoff & Steam Seal	-	29	-	-	-	-	-	4	33	-	-	33	-	-	-	-	-	-	836	-
2a.1.5.41	Miscellaneous Equipment	-	3	-	-	-	-	-	0	3	-	-	3	-	-	-	-	-	-	73	-
2a.1.5.42	Moisture Separator Reheater Drain	-	177	-	-	-	-	-	27	203	-	-	203	-	-	-	-	-	-	5,314	-
2a.1.5.43	SG Blowdown Recycle	-	315	16	22	149	125	-	137	765	765	-	-	1,636	640	-	-	-	123,876	7,986	-
2a.1.5.44	SG Wet Layup Recirculation	-	19	0	0	16	-	-	7	43	43	-	-	179	-	-	-	-	7,272	412	-
2a.1.5.45	SM Supply to Aux Equipment	-	13	-	-	-	-	-	2	15	-	-	15	-	-	-	-	-	-	391	-
2a.1.5.46	SM Supply to Aux Equipment RCA	-	3	0	0	5	-	-	2	10	10	-	-	50	-	-	-	-	2,049	82	-
2a.1.5.47	Steam Supply to FW Pump Turbine	-	6	-	-	-	-	-	1	7	-	-	7	-	-	-	-	-	-	189	-
2a.1.5.48	Turbine Crossover	-	95	-	-	-	-	-	14	109	-	-	109	-	-	-	-	-	-	2,632	-
2a.1.5.49	Turbine Exhaust	-	1	-	-	-	-	-	0	1	-	-	1	-	-	-	-	-	-	26	-
2a.1.5.50	Turbine Hydraulic Oil	-	68	-	-	-	-	-	10	78	-	-	78	-	-	-	-	-	-	2,016	-
2a.1.5	Totals	-	3,256	46	75	2,156	125	-	975	6,634	4,225	-	2,408	23,703	640	-	-	-	1,020,016	91,126	-
2a.1.6	Scaffolding in support of decommissioning	-	319	7	2	40	5	-	88	461	461	-	-	397	25	-	-	-	20,091	9,648	-
2a.1	Subtotal Period 2a Activity Costs	1,006	15,342	12,292	6,280	6,257	21,756	488	20,706	84,126	81,717	-	2,408	57,935	46,596	2,937	459	-	8,418,730	256,540	6,477
Period 2a Collateral Costs																					
2a.3.1	Process liquid waste	64	-	26	168	-	114	-	88	459	459	-	-	-	436	-	-	-	26,158	85	-
2a.3.2	Small tool allowance	-	198	-	-	-	-	-	30	228	205	-	23	-	-	-	-	-	-	-	-
2a.3.3	Spent Fuel Capital and Transfer	-	-	-	-	-	-	317	47	364	-	364	-	-	-	-	-	-	-	-	-
2a.3.4	Survey and Release of Scrap Metal	-	-	-	-	-	-	74	11	85	85	-	-	-	-	-	-	-	-	-	-
2a.3	Subtotal Period 2a Collateral Costs	64	198	26	168	-	114	391	176	1,136	749	364	23	-	436	-	-	-	26,158	85	-
Period 2a Period-Dependent Costs																					
2a.4.1	Decon supplies	87	-	-	-	-	-	-	22	108	108	-	-	-	-	-	-	-	-	-	-
2a.4.2	Insurance	-	-	-	-	-	-	771	77	848	848	-	-	-	-	-	-	-	-	-	-
2a.4.3	Property taxes	-	-	-	-	-	-	1,500	150	1,650	1,485	-	165	-	-	-	-	-	-	-	-
2a.4.4	Health physics supplies	-	1,794	-	-	-	-	-	449	2,243	2,243	-	-	-	-	-	-	-	-	-	-
2a.4.5	Heavy equipment rental	-	3,563	-	-	-	-	-	534	4,097	4,097	-	-	-	-	-	-	-	-	-	-
2a.4.6	Disposal of DAW generated	-	-	69	11	-	171	-	51	302	302	-	-	-	4,061	-	-	-	81,216	148	-
2a.4.7	Plant energy budget	-	-	-	-	-	-	2,437	366	2,802	2,802	-	-	-	-	-	-	-	-	-	-
2a.4.8	NRC Fees	-	-	-	-	-	-	1,060	106	1,166	1,166	-	-	-	-	-	-	-	-	-	-

Table C-1
McGuire Nuclear Station - Unit 1
DECON Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes: Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 2a Period-Dependent Costs (continued)																					
2a.4.9	Emergency Planning Fees	-	-	-	-	-	-	621	62	683	-	683	-	-	-	-	-	-	-	-	-
2a.4.10	Spent Fuel Pool O&M	-	-	-	-	-	-	1,201	180	1,381	-	1,381	-	-	-	-	-	-	-	-	-
2a.4.11	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	302	45	347	347	-	-	-	-	-	-	-	-	-	-
2a.4.12	Indirect Overhead	-	-	-	-	-	-	4,302	645	4,947	4,947	-	-	-	-	-	-	-	-	-	-
2a.4.13	Security Staff Cost	-	-	-	-	-	-	3,616	542	4,159	4,159	-	-	-	-	-	-	-	-	-	-
2a.4.14	Utility Staff Cost	-	-	-	-	-	-	39,873	5,981	45,854	45,854	-	-	-	-	-	-	-	-	-	124,320
2a.4	Subtotal Period 2a Period-Dependent Costs	87	5,357	69	11	-	171	55,682	9,211	70,587	68,358	2,064	165	-	4,061	-	-	-	81,216	148	821,520
2a.0	TOTAL PERIOD 2a COST	1,156	20,897	12,387	6,458	6,257	22,040	56,561	30,093	155,849	150,825	2,428	2,596	57,935	51,093	2,937	459	-	8,526,105	256,773	827,997
PERIOD 2b - Site Decontamination																					
Period 2b Direct Decommissioning Activities																					
Disposal of Plant Systems																					
2b.1.1.1	Annulus Ventilation	-	27	1	1	10	8	-	11	58	58	-	-	108	40	-	-	-	7,990	720	-
2b.1.1.2	Aux & RB Heating Water	-	392	6	11	419	-	-	163	992	992	-	-	4,609	-	-	-	-	187,158	8,974	-
2b.1.1.3	Auxiliary Building Ventilation	-	210	4	8	237	14	-	93	566	566	-	-	2,601	69	-	-	-	111,822	4,843	-
2b.1.1.4	Boron Recycle	472	513	39	50	423	262	-	504	2,263	2,263	-	-	4,648	1,589	-	-	-	309,065	23,203	-
2b.1.1.5	Boron Thermal Regeneration	182	305	21	27	78	169	-	227	1,009	1,009	-	-	852	869	-	-	-	112,294	11,064	-
2b.1.1.6	CRD Ventilation	-	76	6	6	21	35	-	32	175	175	-	-	227	177	-	-	-	25,097	1,792	-
2b.1.1.7	Chemical Volume & Control	540	754	63	77	150	498	-	623	2,706	2,706	-	-	1,652	2,660	-	-	-	295,495	30,686	-
2b.1.1.8	Component Cooling	-	99	-	-	-	-	-	15	114	-	-	114	-	-	-	-	-	-	3,036	-
2b.1.1.9	Component Cooling RCA	-	211	5	9	334	-	-	105	663	663	-	-	3,670	-	-	-	-	149,043	5,069	-
2b.1.1.10	Cont Air Release & Addition	-	34	1	2	10	11	-	13	72	72	-	-	114	57	-	-	-	9,738	892	-
2b.1.1.11	Cont Air Return Ex & H2 Skimmer	-	123	7	11	98	58	-	62	359	359	-	-	1,073	297	-	-	-	70,226	3,161	-
2b.1.1.12	Cont Lower Compartment Vent	-	16	1	1	38	2	-	11	69	69	-	-	419	11	-	-	-	18,018	400	-
2b.1.1.13	Cont Upper Compartment Vent	-	12	0	0	12	1	-	5	30	30	-	-	131	3	-	-	-	5,635	294	-
2b.1.1.14	Containment Purge Ventilation	-	103	11	19	246	83	-	87	549	549	-	-	2,703	425	-	-	-	147,908	2,742	-
2b.1.1.15	Control Area Ventilation	-	52	1	3	98	-	-	28	182	182	-	-	1,079	-	-	-	-	43,812	1,306	-
2b.1.1.16	Conventional Sampling	-	254	19	17	27	112	-	100	530	530	-	-	302	575	-	-	-	63,765	6,468	-
2b.1.1.17	Diesel Building Ventilation	-	3	-	-	-	-	-	1	4	-	-	4	-	-	-	-	-	-	102	-
2b.1.1.18	Electrical (clean)	-	2,304	-	-	-	-	-	346	2,650	-	-	2,650	-	-	-	-	-	-	64,849	-
2b.1.1.19	Electrical (contaminated)	-	658	27	48	290	273	-	286	1,582	1,582	-	-	3,192	1,394	-	-	-	254,729	16,365	-
2b.1.1.20	Electrical (contaminated) RCA	-	4,047	72	128	4,874	-	-	1,769	10,890	10,890	-	-	53,582	-	-	-	-	2,175,984	97,394	-
2b.1.1.21	Equipment Decon	-	64	3	4	65	16	-	31	183	183	-	-	710	90	-	-	-	36,372	1,589	-
2b.1.1.22	Fire Protection	-	100	-	-	-	-	-	15	115	-	-	115	-	-	-	-	-	-	3,084	-
2b.1.1.23	Fire Protection RCA	-	430	9	16	596	-	-	200	1,251	1,251	-	-	6,550	-	-	-	-	265,995	10,640	-
2b.1.1.24	Groundwater Drainage	-	13	-	-	-	-	-	2	15	-	-	15	-	-	-	-	-	-	416	-
2b.1.1.25	Heating Boiler Fuel Gas	-	1	-	-	-	-	-	0	1	-	-	1	-	-	-	-	-	-	41	-
2b.1.1.26	ICI Room Ventilation	-	5	0	0	5	0	-	2	13	13	-	-	55	1	-	-	-	2,347	121	-
2b.1.1.27	Ice Condenser Refrigeration	-	965	22	40	1,513	-	-	476	3,017	3,017	-	-	16,633	-	-	-	-	675,464	23,422	-
2b.1.1.28	Incore Instrumentation Piping	-	33	1	1	-	5	-	10	50	50	-	-	-	26	-	-	-	2,337	932	-
2b.1.1.29	Instrument Air	-	220	-	-	-	-	-	33	253	-	-	253	-	-	-	-	-	-	7,020	-
2b.1.1.30	Instrument Air RCA	-	695	9	15	581	-	-	264	1,564	1,564	-	-	6,385	-	-	-	-	259,314	17,145	-
2b.1.1.31	Liquid Waste Recycle	474	627	59	70	207	441	-	551	2,428	2,428	-	-	2,278	2,549	-	-	-	294,713	26,003	-
2b.1.1.32	Miscellaneous Ventilation	-	21	-	-	-	-	-	3	24	-	-	24	-	-	-	-	-	-	631	-
2b.1.1.33	Nuclear Fuel Handling	-	53	9	14	68	83	-	47	274	274	-	-	752	424	-	-	-	68,602	1,313	-
2b.1.1.34	Nuclear Sampling	-	278	19	17	22	113	-	105	554	554	-	-	241	579	-	-	-	61,660	7,090	-
2b.1.1.35	Nuclear Service Water	-	52	-	-	-	-	-	8	60	-	-	60	-	-	-	-	-	-	1,578	-
2b.1.1.36	Nuclear Service Water RCA	-	347	10	18	683	-	-	193	1,251	1,251	-	-	7,508	-	-	-	-	304,917	8,375	-
2b.1.1.37	Reactor Coolant	-	255	48	79	169	508	-	233	1,293	1,293	-	-	1,863	2,599	-	-	-	308,774	6,598	-
2b.1.1.38	Refueling Water	-	338	15	23	441	78	-	175	1,071	1,071	-	-	4,850	439	-	-	-	232,874	8,581	-
2b.1.1.39	Residual Heat Removal	154	167	22	31	49	199	-	183	805	805	-	-	538	1,020	-	-	-	113,271	5,853	-
2b.1.1.40	Safety Injection	-	449	44	57	321	333	-	257	1,461	1,461	-	-	3,525	1,811	-	-	-	295,864	11,231	-
2b.1.1.41	Turbine Building HVAC	-	120	-	-	-	-	-	18	138	-	-	138	-	-	-	-	-	-	3,949	-

Table C-1
McGuire Nuclear Station - Unit 1
DECON Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt, Lbs.	Craft Manhours	Utility and Contractor Manhours
Disposal of Plant Systems (continued)																					
2b.1.1.42	Unwatering Pump	-	14	-	-	-	-	-	2	16	-	-	16	-	-	-	-	-	-	437	-
2b.1.1	Totals	1,822	15,445	553	802	12,085	3,303	-	7,292	41,302	37,912	-	3,390	132,848	17,706	-	-	-	6,910,283	429,407	-
2b.1.2	Scaffolding in support of decommissioning	-	399	9	2	50	6	-	110	576	576	-	-	496	31	-	-	-	25,113	12,059	-
Decontamination of Site Buildings																					
2b.1.3.1	Reactor Building	958	728	149	228	754	789	-	1,021	4,627	4,627	-	-	8,285	8,443	-	-	-	922,690	39,098	-
2b.1.3.2	Auxiliary Building	267	270	75	116	73	157	-	276	1,235	1,235	-	-	806	4,388	-	-	-	334,754	11,971	-
2b.1.3	Totals	1,225	998	224	345	827	946	-	1,297	5,862	5,862	-	-	9,091	12,832	-	-	-	1,257,444	51,069	-
2b.1	Subtotal Period 2b Activity Costs	3,047	16,843	786	1,149	12,962	4,255	-	8,699	47,741	44,351	-	3,390	142,435	30,568	-	-	-	8,192,840	492,535	-
Period 2b Collateral Costs																					
2b.3.1	Process liquid waste	237	-	160	1,059	-	942	-	529	2,927	2,927	-	-	-	2,696	-	-	-	217,128	526	-
2b.3.2	Small tool allowance	-	343	-	-	-	-	-	51	395	395	-	-	-	-	-	-	-	-	-	-
2b.3.3	Spent Fuel Capital and Transfer	-	-	-	-	-	-	1,312	197	1,508	-	1,508	-	-	-	-	-	-	-	-	-
2b.3.4	Survey and Release of Scrap Metal	-	-	-	-	-	-	93	14	106	106	-	-	-	-	-	-	-	-	-	-
2b.3	Subtotal Period 2b Collateral Costs	237	343	160	1,059	-	942	1,404	791	4,937	3,428	1,508	-	-	2,696	-	-	-	217,128	526	-
Period 2b Period-Dependent Costs																					
2b.4.1	Decon supplies	653	-	-	-	-	-	-	163	816	816	-	-	-	-	-	-	-	-	-	-
2b.4.2	Insurance	-	-	-	-	-	-	1,138	114	1,251	1,251	-	-	-	-	-	-	-	-	-	-
2b.4.3	Property taxes	-	-	-	-	-	-	1,753	175	1,928	1,928	-	-	-	-	-	-	-	-	-	-
2b.4.4	Health physics supplies	-	3,021	-	-	-	-	-	755	3,777	3,777	-	-	-	-	-	-	-	-	-	-
2b.4.5	Heavy equipment rental	-	5,222	-	-	-	-	-	783	6,005	6,005	-	-	-	-	-	-	-	-	-	-
2b.4.6	Disposal of DAW generated	-	-	114	18	-	283	-	85	500	500	-	-	-	6,725	-	-	-	134,506	245	-
2b.4.7	Plant energy budget	-	-	-	-	-	-	2,840	426	3,266	3,266	-	-	-	-	-	-	-	-	-	-
2b.4.8	NRC Fees	-	-	-	-	-	-	1,565	157	1,722	1,722	-	-	-	-	-	-	-	-	-	-
2b.4.9	Emergency Planning Fees	-	-	-	-	-	-	917	92	1,008	-	1,008	-	-	-	-	-	-	-	-	-
2b.4.10	Spent Fuel Pool O&M	-	-	-	-	-	-	1,773	266	2,039	-	2,039	-	-	-	-	-	-	-	-	-
2b.4.11	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	446	67	513	513	-	-	-	-	-	-	-	-	-	-
2b.4.12	Indirect Overhead	-	-	-	-	-	-	4,514	677	5,191	5,191	-	-	-	-	-	-	-	-	-	-
2b.4.13	Security Staff Cost	-	-	-	-	-	-	5,338	801	6,139	6,139	-	-	-	-	-	-	-	-	-	-
2b.4.14	Utility Staff Cost	-	-	-	-	-	-	40,977	6,147	47,124	47,124	-	-	-	-	-	-	-	-	-	183,520
2b.4	Subtotal Period 2b Period-Dependent Costs	653	8,243	114	18	-	283	61,260	10,707	81,278	78,232	3,047	-	-	6,725	-	-	-	134,506	245	915,120
2b.0	TOTAL PERIOD 2b COST	3,937	25,429	1,060	2,226	12,962	5,481	62,664	20,197	133,956	126,011	4,555	3,390	142,435	39,990	-	-	-	8,544,474	493,306	915,120
PERIOD 2c - Delay before Wet Fuel Storage Decontamination																					
Period 2c Direct Decommissioning Activities																					
Period 2c Collateral Costs																					
2c.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	6,686	1,003	7,689	-	7,689	-	-	-	-	-	-	-	-	-
2c.3	Subtotal Period 2c Collateral Costs	-	-	-	-	-	-	6,686	1,003	7,689	-	7,689	-	-	-	-	-	-	-	-	-
Period 2c Period-Dependent Costs																					
2c.4.1	Insurance	-	-	-	-	-	-	4,449	445	4,894	-	4,894	-	-	-	-	-	-	-	-	-
2c.4.2	Property taxes	-	-	-	-	-	-	956	96	1,051	-	1,051	-	-	-	-	-	-	-	-	-
2c.4.3	Health physics supplies	-	898	-	-	-	-	-	225	1,123	-	1,123	-	-	-	-	-	-	-	-	-
2c.4.4	Disposal of DAW generated	-	-	20	3	-	49	-	15	87	-	87	-	-	1,174	-	-	-	23,473	43	-
2c.4.5	Plant energy budget	-	-	-	-	-	-	2,962	444	3,406	-	3,406	-	-	-	-	-	-	-	-	-
2c.4.6	NRC Fees	-	-	-	-	-	-	1,697	170	1,867	-	1,867	-	-	-	-	-	-	-	-	-
2c.4.7	Emergency Planning Fees	-	-	-	-	-	-	3,585	358	3,943	-	3,943	-	-	-	-	-	-	-	-	-
2c.4.8	Spent Fuel Pool O&M	-	-	-	-	-	-	6,934	1,040	7,974	-	7,974	-	-	-	-	-	-	-	-	-
2c.4.9	Indirect Overhead	-	-	-	-	-	-	3,471	521	3,992	-	3,992	-	-	-	-	-	-	-	-	-

Table C-1
McGuire Nuclear Station - Unit 1
DECON Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 2c Period-Dependent Costs (continued)																					
2c.4.10	Security Staff Cost	-	-	-	-	-	-	17,031	2,555	19,585	-	19,585	-	-	-	-	-	-	-	-	567,450
2c.4.11	Utility Staff Cost	-	-	-	-	-	-	31,506	4,726	36,231	-	36,231	-	-	-	-	-	-	-	-	562,600
2c.4	Subtotal Period 2c Period-Dependent Costs	-	898	20	3	-	49	72,590	10,594	84,155	-	84,155	-	-	1,174	-	-	-	23,473	43	1,130,050
2c.0	TOTAL PERIOD 2c COST	-	898	20	3	-	49	79,277	11,597	91,844	-	91,844	-	-	1,174	-	-	-	23,473	43	1,130,050
PERIOD 2d - Decontamination Following Wet Fuel Storage																					
Period 2d Direct Decommissioning Activities																					
2d.1.1	Remove spent fuel racks	351	36	137	79	-	534	-	343	1,480	1,480	-	-	-	2,732	-	-	-	245,101	1,066	-
Disposal of Plant Systems																					
2d.1.2.1	FHB Ventilation	-	41	1	2	49	3	-	19	114	114	-	-	537	14	-	-	-	23,108	925	-
2d.1.2.2	Spent Fuel Cooling	192	241	21	30	95	187	-	224	988	988	-	-	1,043	954	-	-	-	127,920	8,715	-
2d.1.2	Totals	192	282	21	32	144	189	-	242	1,102	1,102	-	-	1,580	969	-	-	-	151,028	9,640	-
Decontamination of Site Buildings																					
2d.1.3.1	Fuel Building	616	719	21	31	276	47	-	548	2,258	2,258	-	-	3,035	972	-	-	-	190,450	31,364	-
2d.1.3	Totals	616	719	21	31	276	47	-	548	2,258	2,258	-	-	3,035	972	-	-	-	190,450	31,364	-
2d.1.4	Scaffolding in support of decommissioning	-	80	2	0	10	1	-	22	115	115	-	-	99	6	-	-	-	5,023	2,412	-
2d.1	Subtotal Period 2d Activity Costs	1,159	1,116	181	142	430	772	-	1,155	4,956	4,956	-	-	4,715	4,679	-	-	-	591,602	44,482	-
Period 2d Additional Costs																					
2d.2.1	License Termination Survey Program Management	-	-	-	-	-	-	616	185	801	801	-	-	-	-	-	-	-	-	-	6,240
2d.2	Subtotal Period 2d Additional Costs	-	-	-	-	-	-	616	185	801	801	-	-	-	-	-	-	-	-	-	6,240
Period 2d Collateral Costs																					
2d.3.1	Process liquid waste	124	-	69	456	-	376	-	232	1,257	1,257	-	-	-	1,170	-	-	-	86,613	228	-
2d.3.2	Small tool allowance	-	40	-	-	-	-	-	6	46	46	-	-	-	-	-	-	-	-	-	-
2d.3.3	Decommissioning Equipment Disposition	-	-	109	30	605	73	-	124	942	942	-	-	6,000	373	-	-	-	303,507	88	-
2d.3.4	Spent Fuel Capital and Transfer	-	-	-	-	-	-	168	25	193	-	193	-	-	-	-	-	-	-	-	-
2d.3.5	Survey and Release of Scrap Metal	-	-	-	-	-	-	19	3	21	21	-	-	-	-	-	-	-	-	-	-
2d.3	Subtotal Period 2d Collateral Costs	124	40	179	487	605	449	186	390	2,459	2,266	193	-	6,000	1,543	-	-	-	390,120	316	-
Period 2d Period-Dependent Costs																					
2d.4.1	Decon supplies	125	-	-	-	-	-	-	31	157	157	-	-	-	-	-	-	-	-	-	-
2d.4.2	Insurance	-	-	-	-	-	-	145	15	160	160	-	-	-	-	-	-	-	-	-	-
2d.4.3	Property taxes	-	-	-	-	-	-	0	0	1	1	-	-	-	-	-	-	-	-	-	-
2d.4.4	Health physics supplies	-	298	-	-	-	-	-	75	373	373	-	-	-	-	-	-	-	-	-	-
2d.4.5	Heavy equipment rental	-	668	-	-	-	-	-	100	768	768	-	-	-	-	-	-	-	-	-	-
2d.4.6	Disposal of DAW generated	-	-	17	3	-	42	-	13	74	74	-	-	-	1,001	-	-	-	20,019	36	-
2d.4.7	Plant energy budget	-	-	-	-	-	-	194	29	223	223	-	-	-	-	-	-	-	-	-	-
2d.4.8	NRC Fees	-	-	-	-	-	-	200	20	220	220	-	-	-	-	-	-	-	-	-	-
2d.4.9	Emergency Planning Fees	-	-	-	-	-	-	117	12	129	-	129	-	-	-	-	-	-	-	-	-
2d.4.10	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	114	17	131	131	-	-	-	-	-	-	-	-	-	-
2d.4.11	Indirect Overhead	-	-	-	-	-	-	358	54	412	412	-	-	-	-	-	-	-	-	-	-
2d.4.12	Security Staff Cost	-	-	-	-	-	-	378	57	435	435	-	-	-	-	-	-	-	-	-	11,500
2d.4.13	Utility Staff Cost	-	-	-	-	-	-	3,221	483	3,705	3,705	-	-	-	-	-	-	-	-	-	58,037
2d.4	Subtotal Period 2d Period-Dependent Costs	125	966	17	3	-	42	4,729	905	6,787	6,658	129	-	-	1,001	-	-	-	20,019	36	69,537
2d.0	TOTAL PERIOD 2d COST	1,409	2,122	377	631	1,035	1,263	5,531	2,635	15,003	14,681	322	-	10,715	7,223	-	-	-	1,001,741	44,834	75,777

Table C-1
McGuire Nuclear Station - Unit 1
DECON Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 2e - License Termination																					
Period 2e Direct Decommissioning Activities																					
2e.1.1	ORISE confirmatory survey	-	-	-	-	-	-	150	45	195	195	-	-	-	-	-	-	-	-	-	-
2e.1.2	Terminate license																				
2e.1	Subtotal Period 2e Activity Costs	-	-	-	-	-	-	150	45	195 [a]	195	-	-	-	-	-	-	-	-	-	-
Period 2e Additional Costs																					
2e.2.1	License Termination Survey	-	-	-	-	-	-	7,944	2,383	10,328	10,328	-	-	-	-	-	-	-	-	189,524	3,120
2e.2	Subtotal Period 2e Additional Costs	-	-	-	-	-	-	7,944	2,383	10,328	10,328	-	-	-	-	-	-	-	-	189,524	3,120
Period 2e Collateral Costs																					
2e.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	162	24	187	-	187	-	-	-	-	-	-	-	-	-
2e.3	Subtotal Period 2e Collateral Costs	-	-	-	-	-	-	162	24	187	-	187	-	-	-	-	-	-	-	-	-
Period 2e Period-Dependent Costs																					
2e.4.1	Insurance	-	-	-	-	-	-	329	33	361	361	-	-	-	-	-	-	-	-	-	-
2e.4.2	Property taxes	-	-	-	-	-	-	1	0	1	1	-	-	-	-	-	-	-	-	-	-
2e.4.3	Health physics supplies	-	1,040	-	-	-	-	-	260	1,300	1,300	-	-	-	-	-	-	-	-	-	-
2e.4.4	Disposal of DAW generated	-	-	5	1	-	13	-	4	23	23	-	-	-	315	-	-	-	6,299	11	-
2e.4.5	Plant energy budget	-	-	-	-	-	-	240	36	276	276	-	-	-	-	-	-	-	-	-	-
2e.4.6	NRC Fees	-	-	-	-	-	-	532	53	585	585	-	-	-	-	-	-	-	-	-	-
2e.4.7	Emergency Planning Fees	-	-	-	-	-	-	38	4	41	-	41	-	-	-	-	-	-	-	-	-
2e.4.8	Indirect Overhead	-	-	-	-	-	-	427	64	491	491	-	-	-	-	-	-	-	-	-	-
2e.4.9	Security Staff Cost	-	-	-	-	-	-	922	138	1,060	1,060	-	-	-	-	-	-	-	-	-	27,893
2e.4.10	Utility Staff Cost	-	-	-	-	-	-	4,060	609	4,669	4,669	-	-	-	-	-	-	-	-	-	69,143
2e.4	Subtotal Period 2e Period-Dependent Costs	-	1,040	5	1	-	13	6,547	1,201	8,808	8,766	41	-	-	315	-	-	-	6,299	11	97,036
2e.0	TOTAL PERIOD 2e COST	-	1,040	5	1	-	13	14,804	3,654	19,517	19,289	228	-	-	315	-	-	-	6,299	189,536	100,156
PERIOD 2 TOTALS		6,502	50,387	13,848	9,320	20,254	28,846	218,837	68,175	416,169	310,806	99,377	5,986	211,084	99,794	2,937	459	-	18,102,090	984,492	3,049,099
PERIOD 3b - Site Restoration																					
Period 3b Direct Decommissioning Activities																					
Demolition of Remaining Site Buildings																					
3b.1.1.1	Reactor Building	-	2,706	-	-	-	-	-	406	3,112	-	-	3,112	-	-	-	-	-	-	40,056	-
3b.1.1.2	AB-Aux FW Pump/Pntrtn Rm/Swtchgr Rm	-	494	-	-	-	-	-	74	568	-	-	568	-	-	-	-	-	-	6,726	-
3b.1.1.3	Auxiliary Building	-	1,642	-	-	-	-	-	246	1,888	-	-	1,888	-	-	-	-	-	-	23,480	-
3b.1.1.4	Diesel Generator Building	-	135	-	-	-	-	-	20	155	-	-	155	-	-	-	-	-	-	1,794	-
3b.1.1.5	Intake & Discharge Structure & Piping	-	1,111	-	-	-	-	-	167	1,278	-	-	1,278	-	-	-	-	-	-	16,112	-
3b.1.1.6	Main Steam Doghouses	-	430	-	-	-	-	-	64	494	-	-	494	-	-	-	-	-	-	5,450	-
3b.1.1.7	Turbine Building	-	2,891	-	-	-	-	-	434	3,324	-	-	3,324	-	-	-	-	-	-	51,809	-
3b.1.1.8	Turbine Pedestal	-	670	-	-	-	-	-	101	771	-	-	771	-	-	-	-	-	-	8,172	-
3b.1.1.9	Fuel Building	-	544	-	-	-	-	-	82	626	-	-	626	-	-	-	-	-	-	8,332	-
3b.1.1	Totals	-	10,622	-	-	-	-	-	1,593	12,215	-	-	12,215	-	-	-	-	-	-	161,931	-
Site Closeout Activities																					
3b.1.2	Grade & landscape site	-	182	-	-	-	-	-	27	210	-	-	210	-	-	-	-	-	-	404	-
3b.1.3	Final report to NRC	-	-	-	-	-	-	106	16	121	121	-	-	-	-	-	-	-	-	-	1,560
3b.1	Subtotal Period 3b Activity Costs	-	10,804	-	-	-	-	106	1,636	12,546	121	-	12,425	-	-	-	-	-	-	162,335	1,560
Period 3b Additional Costs																					
3b.2.1	Concrete Crushing	-	393	-	-	-	-	3	59	455	-	-	455	-	-	-	-	-	-	1,991	-
3b.2	Subtotal Period 3b Additional Costs	-	393	-	-	-	-	3	59	455	-	-	455	-	-	-	-	-	-	1,991	-

Table C-1
McGuire Nuclear Station - Unit 1
DECON Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 3b Collateral Costs																					
3b.3.1	Small tool allowance	-	117	-	-	-	-	-	17	134	-	-	134	-	-	-	-	-	-	-	-
3b.3.2	Spent Fuel Capital and Transfer	-	-	-	-	-	-	193	29	222	-	222	-	-	-	-	-	-	-	-	-
3b.3	Subtotal Period 3b Collateral Costs	-	117	-	-	-	-	193	46	356	-	222	134	-	-	-	-	-	-	-	-
Period 3b Period-Dependent Costs																					
3b.4.1	Insurance	-	-	-	-	-	-	731	73	804	0	724	80	-	-	-	-	-	-	-	-
3b.4.2	Property taxes	-	-	-	-	-	-	3	0	3	-	-	3	-	-	-	-	-	-	-	-
3b.4.3	Heavy equipment rental	-	4,933	-	-	-	-	-	740	5,673	-	-	5,673	-	-	-	-	-	-	-	-
3b.4.4	Plant energy budget	-	-	-	-	-	-	267	40	307	0	276	31	-	-	-	-	-	-	-	-
3b.4.5	Emergency Planning Fees	-	-	-	-	-	-	84	8	92	-	92	-	-	-	-	-	-	-	-	-
3b.4.6	Indirect Overhead	-	-	-	-	-	-	550	83	633	633	-	-	-	-	-	-	-	-	-	-
3b.4.7	Security Staff Cost	-	-	-	-	-	-	1,974	296	2,270	-	1,589	681	-	-	-	-	-	-	-	59,032
3b.4.8	Utility Staff Cost	-	-	-	-	-	-	4,977	747	5,723	(0)	5,151	572	-	-	-	-	-	-	-	89,177
3b.4	Subtotal Period 3b Period-Dependent Costs	-	4,933	-	-	-	-	8,585	1,987	15,505	633	7,832	7,041	-	-	-	-	-	-	-	148,209
3b.0	TOTAL PERIOD 3b COST	-	16,247	-	-	-	-	8,887	3,729	28,863	754	8,055	20,055	-	-	-	-	-	-	164,326	149,769
PERIOD 3d - GTCC shipping																					
Period 3d Direct Decommissioning Activities																					
Nuclear Steam Supply System Removal																					
3d.1.1.1	Vessel & Internals GTCC Disposal	-	-	625	-	-	14,761	-	2,277	17,663	17,663	-	-	-	-	-	-	666	129,800	-	-
3d.1.1	Totals	-	-	625	-	-	14,761	-	2,277	17,663	17,663	-	-	-	-	-	-	666	129,800	-	-
3d.1	Subtotal Period 3d Activity Costs	-	-	625	-	-	14,761	-	2,277	17,663	17,663	-	-	-	-	-	-	666	129,800	-	-
3d.0	TOTAL PERIOD 3d COST	-	-	625	-	-	14,761	-	2,277	17,663	17,663	-	-	-	-	-	-	666	129,800	-	-
PERIOD 3 TOTALS		-	16,247	625	-	-	14,761	8,887	6,006	46,526	18,417	8,055	20,055	-	-	-	-	666	129,800	164,326	149,769
TOTAL COST TO DECOMMISSION		9,348	69,047	14,545	9,697	20,254	45,985	308,059	88,112	565,046	428,787	109,380	26,879	211,084	100,962	3,687	459	666	18,345,840	1,169,202	4,100,213

TOTAL COST TO DECOMMISSION WITH 18.47% CONTINGENCY:	**$565,046**	**thousands of 2008 dollars**
TOTAL NRC LICENSE TERMINATION COST IS 75.89% OR:	**$428,787**	**thousands of 2008 dollars**
SPENT FUEL MANAGEMENT COST IS 19.36% OR:	**$109,380**	**thousands of 2008 dollars**
NON-NUCLEAR DEMOLITION COST IS 4.76% OR:	**$26,879**	**thousands of 2008 dollars**
TOTAL LOW-LEVEL RADIOACTIVE WASTE VOLUME BURIED (EXCLUDING GTCC):	**105,108**	**cubic feet**
TOTAL GREATER THAN CLASS C RADWASTE VOLUME GENERATED:	**666**	**cubic feet**
TOTAL SCRAP METAL REMOVED:	**42,275**	**tons**
TOTAL CRAFT LABOR REQUIREMENTS:	**1,169,202**	**man-hours**

End Notes:
n/a - indicates that this activity not charged as decommissioning expense.
a - indicates that this activity performed by decommissioning staff.
0 - indicates that this value is less than 0.5 but is non-zero.
a cell containing " - " indicates a zero value

Table C-2
McGuire Nuclear Station - Unit 2
DECON Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 1a - Shutdown through Transition																					
Period 1a Direct Decommissioning Activities																					
1a.1.1	Prepare preliminary decommissioning cost	-	-	-	-	-	-	38	6	43	43	-	-	-	-	-	-	-	-	-	559
1a.1.2	Notification of Cessation of Operations									a											
1a.1.3	Remove fuel & source material									n/a											
1a.1.4	Notification of Permanent Defueling									a											
1a.1.5	Deactivate plant systems & process waste									a											
1a.1.6	Prepare and submit PSDAR	-	-	-	-	-	-	58	9	67	67	-	-	-	-	-	-	-	-	-	860
1a.1.7	Review plant dwgs & specs.	-	-	-	-	-	-	134	20	154	154	-	-	-	-	-	-	-	-	-	1,978
1a.1.8	Perform detailed rad survey									a											
1a.1.9	Estimate by-product inventory	-	-	-	-	-	-	29	4	33	33	-	-	-	-	-	-	-	-	-	430
1a.1.10	End product description	-	-	-	-	-	-	29	4	33	33	-	-	-	-	-	-	-	-	-	430
1a.1.11	Detailed by-product inventory	-	-	-	-	-	-	38	6	43	43	-	-	-	-	-	-	-	-	-	559
1a.1.12	Define major work sequence	-	-	-	-	-	-	218	33	251	251	-	-	-	-	-	-	-	-	-	3,225
1a.1.13	Perform SER and EA	-	-	-	-	-	-	90	14	104	104	-	-	-	-	-	-	-	-	-	1,333
1a.1.14	Perform Site-Specific Cost Study	-	-	-	-	-	-	145	22	167	167	-	-	-	-	-	-	-	-	-	2,150
1a.1.15	Prepare/submit License Termination Plan	-	-	-	-	-	-	119	18	137	137	-	-	-	-	-	-	-	-	-	1,761
1a.1.16	Receive NRC approval of termination plan									a											
Activity Specifications																					
1a.1.17.1	Plant & temporary facilities	-	-	-	-	-	-	143	21	165	148	-	16	-	-	-	-	-	-	-	2,116
1a.1.17.2	Plant systems	-	-	-	-	-	-	121	18	139	125	-	14	-	-	-	-	-	-	-	1,792
1a.1.17.3	NSSS Decontamination Flush	-	-	-	-	-	-	15	2	17	17	-	-	-	-	-	-	-	-	-	215
1a.1.17.4	Reactor internals	-	-	-	-	-	-	206	31	237	237	-	-	-	-	-	-	-	-	-	3,053
1a.1.17.5	Reactor vessel	-	-	-	-	-	-	189	28	217	217	-	-	-	-	-	-	-	-	-	2,795
1a.1.17.6	Biological shield	-	-	-	-	-	-	15	2	17	17	-	-	-	-	-	-	-	-	-	215
1a.1.17.7	Steam generators	-	-	-	-	-	-	91	14	104	104	-	-	-	-	-	-	-	-	-	1,342
1a.1.17.8	Reinforced concrete	-	-	-	-	-	-	47	7	54	27	-	27	-	-	-	-	-	-	-	688
1a.1.17.9	Main Turbine	-	-	-	-	-	-	12	2	13	-	-	13	-	-	-	-	-	-	-	172
1a.1.17.10	Main Condensers	-	-	-	-	-	-	12	2	13	-	-	13	-	-	-	-	-	-	-	172
1a.1.17.11	Plant structures & buildings	-	-	-	-	-	-	91	14	104	52	-	52	-	-	-	-	-	-	-	1,342
1a.1.17.12	Waste management	-	-	-	-	-	-	134	20	154	154	-	-	-	-	-	-	-	-	-	1,978
1a.1.17.13	Facility & site closeout	-	-	-	-	-	-	26	4	30	15	-	15	-	-	-	-	-	-	-	387
1a.1.17	Total	-	-	-	-	-	-	1,100	165	1,265	1,114	-	151	-	-	-	-	-	-	-	16,265
Planning & Site Preparations																					
1a.1.18	Prepare dismantling sequence	-	-	-	-	-	-	70	10	80	80	-	-	-	-	-	-	-	-	-	1,032
1a.1.19	Plant prep. & temp. svces	-	-	-	-	-	-	2,700	405	3,105	3,105	-	-	-	-	-	-	-	-	-	-
1a.1.20	Design water clean-up system	-	-	-	-	-	-	41	6	47	47	-	-	-	-	-	-	-	-	-	602
1a.1.21	Rigging/Cont. Cntrl Envlps/tooling/etc.	-	-	-	-	-	-	2,100	315	2,415	2,415	-	-	-	-	-	-	-	-	-	-
1a.1.22	Procure casks/liners & containers	-	-	-	-	-	-	36	5	41	41	-	-	-	-	-	-	-	-	-	529
1a.1	Subtotal Period 1a Activity Costs	-	-	-	-	-	-	6,945	1,042	7,987	7,835	-	151	-	-	-	-	-	-	-	31,714
Period 1a Collateral Costs																					
1a.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	95	14	109	-	109	-	-	-	-	-	-	-	-	-
1a.3	Subtotal Period 1a Collateral Costs	-	-	-	-	-	-	95	14	109	-	109	-	-	-	-	-	-	-	-	-
Period 1a Period-Dependent Costs																					
1a.4.1	Insurance	-	-	-	-	-	-	1,070	107	1,177	1,177	-	-	-	-	-	-	-	-	-	-
1a.4.2	Property taxes	-	-	-	-	-	-	1,389	139	1,528	1,528	-	-	-	-	-	-	-	-	-	-
1a.4.3	Health physics supplies	-	428	-	-	-	-	-	107	535	535	-	-	-	-	-	-	-	-	-	-
1a.4.4	Heavy equipment rental	-	462	-	-	-	-	-	69	532	532	-	-	-	-	-	-	-	-	-	-
1a.4.5	Disposal of DAW generated	-	-	10	2	-	24	-	7	43	43	-	-	-	574	-	-	-	11,482	21	-
1a.4.6	Plant energy budget	-	-	-	-	-	-	1,601	240	1,841	1,841	-	-	-	-	-	-	-	-	-	-
1a.4.7	NRC Fees	-	-	-	-	-	-	474	47	521	521	-	-	-	-	-	-	-	-	-	-
1a.4.8	Emergency Planning Fees	-	-	-	-	-	-	388	39	426	-	426	-	-	-	-	-	-	-	-	-
1a.4.9	FEMA Fees	-	-	-	-	-	-	195	29	224	224	-	-	-	-	-	-	-	-	-	-

Table C-2
McGuire Nuclear Station - Unit 2
DECON Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
Period 1a Period-Dependent Costs (continued)																					
1a.4.10	Spent Fuel Pool O&M	-	-	-	-	-	-	750	112	862	-	862	-	-	-	-	-	-	-	-	-
1a.4.11	ISFSI Operating Costs	-	-	-	-	-	-	110	16	126	-	126	-	-	-	-	-	-	-	-	-
1a.4.12	Indirect Overhead	-	-	-	-	-	-	2,213	332	2,545	2,545	-	-	-	-	-	-	-	-	-	-
1a.4.13	Security Staff Cost	-	-	-	-	-	-	2,894	434	3,328	3,328	-	-	-	-	-	-	-	-	-	-
1a.4.14	Utility Staff Cost	-	-	-	-	-	-	19,345	2,902	22,246	22,246	-	-	-	-	-	-	-	-	-	102,634
1a.4	Subtotal Period 1a Period-Dependent Costs	-	890	10	2	-	24	30,426	4,581	35,933	34,519	1,414	-	-	574	-	-	-	11,482	21	461,246
1a.0	TOTAL PERIOD 1a COST	-	890	10	2	-	24	37,465	5,637	44,029	42,354	1,524	151	-	574	-	-	-	11,482	21	492,959
PERIOD 1b - Decommissioning Preparations																					
Period 1b Direct Decommissioning Activities																					
Detailed Work Procedures																					
1b.1.1.1	Plant systems	-	-	-	-	-	-	138	21	158	142	-	16	-	-	-	-	-	-	-	2,035
1b.1.1.2	NSSS Decontamination Flush	-	-	-	-	-	-	29	4	33	33	-	-	-	-	-	-	-	-	-	430
1b.1.1.3	Reactor internals	-	-	-	-	-	-	73	11	84	84	-	-	-	-	-	-	-	-	-	1,075
1b.1.1.4	Remaining buildings	-	-	-	-	-	-	39	6	45	11	-	34	-	-	-	-	-	-	-	581
1b.1.1.5	CRD cooling assembly	-	-	-	-	-	-	29	4	33	33	-	-	-	-	-	-	-	-	-	430
1b.1.1.6	CRD housings & ICI tubes	-	-	-	-	-	-	29	4	33	33	-	-	-	-	-	-	-	-	-	430
1b.1.1.7	Incore instrumentation	-	-	-	-	-	-	29	4	33	33	-	-	-	-	-	-	-	-	-	430
1b.1.1.8	Reactor vessel	-	-	-	-	-	-	106	16	121	121	-	-	-	-	-	-	-	-	-	1,561
1b.1.1.9	Facility closeout	-	-	-	-	-	-	35	5	40	20	-	20	-	-	-	-	-	-	-	516
1b.1.1.10	Missile shields	-	-	-	-	-	-	13	2	15	15	-	-	-	-	-	-	-	-	-	194
1b.1.1.11	Biological shield	-	-	-	-	-	-	35	5	40	40	-	-	-	-	-	-	-	-	-	516
1b.1.1.12	Steam generators	-	-	-	-	-	-	134	20	154	154	-	-	-	-	-	-	-	-	-	1,978
1b.1.1.13	Reinforced concrete	-	-	-	-	-	-	29	4	33	17	-	17	-	-	-	-	-	-	-	430
1b.1.1.14	Main Turbine	-	-	-	-	-	-	45	7	52	-	-	52	-	-	-	-	-	-	-	671
1b.1.1.15	Main Condensers	-	-	-	-	-	-	45	7	52	-	-	52	-	-	-	-	-	-	-	671
1b.1.1.16	Auxiliary building	-	-	-	-	-	-	79	12	91	82	-	9	-	-	-	-	-	-	-	1,174
1b.1.1.17	Reactor building	-	-	-	-	-	-	79	12	91	82	-	9	-	-	-	-	-	-	-	1,174
1b.1.1	Total	-	-	-	-	-	-	967	145	1,112	903	-	209	-	-	-	-	-	-	-	14,294
1b.1.2	Decon primary loop	511	-	-	-	-	-	-	255	766	766	-	-	-	-	-	-	-	-	1,067	-
1b.1	Subtotal Period 1b Activity Costs	511	-	-	-	-	-	967	400	1,878	1,669	-	209	-	-	-	-	-	-	1,067	14,294
Period 1b Additional Costs																					
1b.2.1	Spent Fuel Pool Isolation	-	-	-	-	-	-	6,272	941	7,212	7,212	-	-	-	-	-	-	-	-	-	-
1b.2.2	Site Characterization	-	-	-	-	-	-	1,255	377	1,632	1,632	-	-	-	-	-	-	-	-	-	-
1b.2	Subtotal Period 1b Additional Costs	-	-	-	-	-	-	7,527	1,317	8,844	8,844	-	-	-	-	-	-	-	-	8,167	3,357
Period 1b Collateral Costs																				8,167	3,357
1b.3.1	Decon equipment	878	-	-	-	-	-	-	132	1,010	1,010	-	-	-	-	-	-	-	-	-	-
1b.3.2	Process liquid waste	29	-	55	374	-	2,336	-	660	3,454	3,454	-	-	-	184	750	-	-	94,286	182	-
1b.3.3	Small tool allowance	-	1	-	-	-	-	-	0	1	1	-	-	-	-	-	-	-	-	-	-
1b.3.4	Pipe cutting equipment	-	1,000	-	-	-	-	-	150	1,150	1,150	-	-	-	-	-	-	-	-	-	-
1b.3.5	Decon rig	1,400	-	-	-	-	-	-	210	1,610	1,610	-	-	-	-	-	-	-	-	-	-
1b.3.6	Spent Fuel Capital and Transfer	-	-	-	-	-	-	283	43	326	-	326	-	-	-	-	-	-	-	-	-
1b.3	Subtotal Period 1b Collateral Costs	2,307	1,001	55	374	-	2,336	283	1,194	7,552	7,226	326	-	-	184	750	-	-	94,286	182	-
Period 1b Period-Dependent Costs																					
1b.4.1	Decon supplies	28	-	-	-	-	-	-	7	35	35	-	-	-	-	-	-	-	-	-	-
1b.4.2	Insurance	-	-	-	-	-	-	548	55	603	603	-	-	-	-	-	-	-	-	-	-
1b.4.3	Property taxes	-	-	-	-	-	-	711	71	783	783	-	-	-	-	-	-	-	-	-	-
1b.4.4	Health physics supplies	-	238	-	-	-	-	-	60	298	298	-	-	-	-	-	-	-	-	-	-
1b.4.5	Heavy equipment rental	-	237	-	-	-	-	-	36	272	272	-	-	-	-	-	-	-	-	-	-
1b.4.6	Disposal of DAW generated	-	-	6	1	-	14	-	4	25	25	-	-	-	333	-	-	-	6,652	12	-

Table C-2
McGuire Nuclear Station - Unit 2
DECON Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 1b Period-Dependent Costs (continued)																					
1b.4.7	Plant energy budget	-	-	-	-	-	-	1,640	246	1,886	1,886	-	-	-	-	-	-	-	-	-	-
1b.4.8	NRC Fees	-	-	-	-	-	-	243	24	267	267	-	-	-	-	-	-	-	-	-	-
1b.4.9	Emergency Planning Fees	-	-	-	-	-	-	199	20	218	-	218	-	-	-	-	-	-	-	-	-
1b.4.10	FEMA Fees	-	-	-	-	-	-	100	15	115	115	-	-	-	-	-	-	-	-	-	-
1b.4.11	Spent Fuel Pool O&M	-	-	-	-	-	-	384	58	442	-	442	-	-	-	-	-	-	-	-	-
1b.4.12	ISFSI Operating Costs	-	-	-	-	-	-	56	8	65	-	65	-	-	-	-	-	-	-	-	-
1b.4.13	Indirect Overhead	-	-	-	-	-	-	1,385	208	1,593	1,593	-	-	-	-	-	-	-	-	-	-
1b.4.14	Security Staff Cost	-	-	-	-	-	-	1,482	222	1,705	1,705	-	-	-	-	-	-	-	-	-	-
1b.4.15	Utility Staff Cost	-	-	-	-	-	-	12,367	1,855	14,222	14,222	-	-	-	-	-	-	-	-	-	52,576
1b.4	Subtotal Period 1b Period-Dependent Costs	28	475	6	1	-	14	19,115	2,889	22,527	21,803	724	-	-	333	-	-	-	6,652	12	277,101
1b.0	TOTAL PERIOD 1b COST	2,845	1,477	61	375	-	2,350	27,892	5,801	40,801	39,541	1,050	209	-	517	750	-	-	100,938	9,428	294,753
PERIOD 1 TOTALS		2,845	2,367	71	377	-	2,374	65,358	11,438	84,829	81,895	2,574	360	-	1,091	750	-	-	112,420	9,449	787,712
PERIOD 2a - Large Component Removal																					
Period 2a Direct Decommissioning Activities																					
Nuclear Steam Supply System Removal																					
2a.1.1.1	Reactor Coolant Piping	206	192	21	47	-	330	-	243	1,039	1,039	-	-	-	1,250	-	-	-	151,190	9,198	-
2a.1.1.2	Pressurizer Relief Tank	25	21	6	12	-	80	-	40	183	183	-	-	-	329	-	-	-	36,553	1,072	-
2a.1.1.3	Reactor Coolant Pumps & Motors	76	69	39	153	143	1,210	-	406	2,096	2,096	-	-	272	4,708	-	-	-	888,360	3,772	-
2a.1.1.4	Pressurizer	39	45	351	334	-	992	-	364	2,126	2,126	-	-	-	3,860	-	-	-	240,508	2,487	-
2a.1.1.5	Steam Generators	329	2,606	2,654	3,023	2,302	4,777	-	3,075	18,767	18,767	-	-	21,655	18,589	-	-	-	3,569,235	23,227	3,750
2a.1.1.6	CRDMs/ICIs/Service Structure Removal	126	66	198	72	-	151	-	148	761	761	-	-	-	3,396	-	-	-	69,259	4,166	-
2a.1.1.7	Reactor Vessel Internals	130	2,256	6,863	1,419	-	5,497	244	6,612	23,020	23,020	-	-	-	2,754	683	459	-	341,105	30,783	1,363
2a.1.1.8	Reactor Vessel	75	4,184	1,627	1,039	-	7,696	244	7,726	22,591	22,591	-	-	-	6,320	2,254	-	-	937,367	30,783	1,363
2a.1.1	Totals	1,006	9,439	11,761	6,099	2,445	20,732	488	18,614	70,584	70,584	-	-	21,927	41,207	2,937	459	-	6,233,578	105,489	6,477
Removal of Major Equipment																					
2a.1.2	Main Turbine/Generator	-	373	315	23	882	478	-	380	2,452	2,452	-	-	4,633	2,580	-	-	-	625,275	9,309	-
2a.1.3	Main Condensers	-	1,136	163	81	733	419	-	527	3,061	3,061	-	-	7,274	2,145	-	-	-	519,770	29,171	-
Cascading Costs from Clean Building Demolition																					
2a.1.4.1	Reactor Building	-	477	-	-	-	-	-	72	548	548	-	-	-	-	-	-	-	-	7,048	-
2a.1.4.2	AB - Aux FW Pump/Pntrtn Rm/Swtchgr Rm	-	55	-	-	-	-	-	8	63	63	-	-	-	-	-	-	-	-	747	-
2a.1.4.3	AB - Cable & Battery Rooms(common)	-	20	-	-	-	-	-	3	22	22	-	-	-	-	-	-	-	-	274	-
2a.1.4.4	AB - Cont.Material Handling Area(common)	-	38	-	-	-	-	-	6	44	44	-	-	-	-	-	-	-	-	688	-
2a.1.4.5	AB - Hot Mach Shop/Lab Area (common)	-	50	-	-	-	-	-	7	57	57	-	-	-	-	-	-	-	-	839	-
2a.1.4.6	Auxiliary Building	-	182	-	-	-	-	-	27	210	210	-	-	-	-	-	-	-	-	2,609	-
2a.1.4.7	Equipment Staging Building(common)	-	20	-	-	-	-	-	3	24	24	-	-	-	-	-	-	-	-	266	-
2a.1.4.8	Main Steam Doghouse	-	48	-	-	-	-	-	7	55	55	-	-	-	-	-	-	-	-	603	-
2a.1.4.9	Radwaste Facility(common)	-	14	-	-	-	-	-	2	17	17	-	-	-	-	-	-	-	-	241	-
2a.1.4.10	Service Building(common)	-	133	-	-	-	-	-	20	153	153	-	-	-	-	-	-	-	-	1,946	-
2a.1.4.11	Waste Solidification Building(common)	-	8	-	-	-	-	-	1	9	9	-	-	-	-	-	-	-	-	101	-
2a.1.4.12	Fuel Building	-	55	-	-	-	-	-	8	64	64	-	-	-	-	-	-	-	-	790	-
2a.1.4	Totals	-	1,100	-	-	-	-	-	165	1,265	1,265	-	-	-	-	-	-	-	-	16,153	-
Disposal of Plant Systems																					
2a.1.5.1	Auxiliary Feedwater	-	299	15	26	1,010	-	-	232	1,581	1,581	-	-	11,098	-	-	-	-	450,698	7,393	-
2a.1.5.2	Auxiliary Fuel Oil	-	3	-	-	-	-	-	0	3	-	-	3	-	-	-	-	-	-	83	-
2a.1.5.3	Auxiliary Steam	-	35	-	-	-	-	-	5	40	-	-	40	-	-	-	-	-	-	1,039	-
2a.1.5.4	Auxiliary Steam RCA	-	89	1	2	83	-	-	35	210	210	-	-	908	-	-	-	-	36,891	2,145	-
2a.1.5.5	Cond Circ Water Intake Screen Bkwash	-	3	-	-	-	-	-	0	3	-	-	3	-	-	-	-	-	-	77	-
2a.1.5.6	Condensate	-	374	-	-	-	-	-	56	430	-	-	430	-	-	-	-	-	-	11,186	-
2a.1.5.7	Condensate Storage	-	86	-	-	-	-	-	13	99	-	-	99	-	-	-	-	-	-	2,338	-
2a.1.5.8	Condenser Circulating Water	-	131	-	-	-	-	-	20	150	-	-	150	-	-	-	-	-	-	3,983	-

Table C-2
McGuire Nuclear Station - Unit 2
DECON Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Disposal of Plant Systems (continued)																					
2a.1.5.9	Condenser Cleaning	-	18	-	-	-	-	-	3	21	-	-	21	-	-	-	-	-	-	561	-
2a.1.5.10	Condenser Steam Air Injector	-	54	-	-	-	-	-	8	62	-	-	62	-	-	-	-	-	-	1,691	-
2a.1.5.11	Containment Spray	-	125	3	5	200	-	-	62	396	396	-	-	2,203	-	-	-	-	89,459	3,007	-
2a.1.5.12	Conventional Chemical Addition	-	10	-	-	-	-	-	1	11	-	-	11	-	-	-	-	-	-	302	-
2a.1.5.13	Conventional Chemical Addition RCA	-	19	0	0	15	-	-	7	42	42	-	-	167	-	-	-	-	6,783	405	-
2a.1.5.14	Conventional LP Service Water	-	51	-	-	-	-	-	8	58	-	-	58	-	-	-	-	-	-	1,591	-
2a.1.5.15	DG Engine Air Intake & Exhaust	-	2	-	-	-	-	-	0	2	-	-	2	-	-	-	-	-	-	57	-
2a.1.5.16	DG Engine Cooling Water	-	26	-	-	-	-	-	4	30	-	-	30	-	-	-	-	-	-	775	-
2a.1.5.17	DG Engine Crankcase Vacuum	-	2	-	-	-	-	-	0	2	-	-	2	-	-	-	-	-	-	58	-
2a.1.5.18	DG Engine Fuel Oil	-	45	-	-	-	-	-	7	52	-	-	52	-	-	-	-	-	-	1,322	-
2a.1.5.19	DG Engine Lube Oil	-	38	-	-	-	-	-	6	44	-	-	44	-	-	-	-	-	-	1,155	-
2a.1.5.20	DG Engine Starting Air	-	24	-	-	-	-	-	4	28	-	-	28	-	-	-	-	-	-	755	-
2a.1.5.21	DG Room Sump Pump	-	17	-	-	-	-	-	2	19	-	-	19	-	-	-	-	-	-	483	-
2a.1.5.22	Environ Water Qual Monitor (shared)	-	3	-	-	-	-	-	0	4	-	-	4	-	-	-	-	-	-	102	-
2a.1.5.23	FW Lube & Hydraulic Oil	-	20	-	-	-	-	-	3	23	-	-	23	-	-	-	-	-	-	610	-
2a.1.5.24	FW Pump Turbine Steam Seal	-	5	-	-	-	-	-	1	6	-	-	6	-	-	-	-	-	-	154	-
2a.1.5.25	Feedwater	-	198	-	-	-	-	-	30	228	-	-	228	-	-	-	-	-	-	5,612	-
2a.1.5.26	Feedwater Pump Condensate Seal	-	22	-	-	-	-	-	3	25	-	-	25	-	-	-	-	-	-	681	-
2a.1.5.27	Feedwater RCA	-	88	4	6	244	-	-	60	402	402	-	-	2,686	-	-	-	-	109,061	2,169	-
2a.1.5.28	Generator Hydrogen	-	15	-	-	-	-	-	2	17	-	-	17	-	-	-	-	-	-	459	-
2a.1.5.29	Generator Seal Oil	-	8	-	-	-	-	-	1	9	-	-	9	-	-	-	-	-	-	254	-
2a.1.5.30	Generator Stator Cooling Water	-	18	-	-	-	-	-	3	21	-	-	21	-	-	-	-	-	-	539	-
2a.1.5.31	H2 Blanket & Bulk Storage (shared)	-	15	-	-	-	-	-	2	17	-	-	17	-	-	-	-	-	-	482	-
2a.1.5.32	Heater Bleed Steam	-	76	-	-	-	-	-	11	87	-	-	87	-	-	-	-	-	-	2,363	-
2a.1.5.33	Heater Drains	-	203	-	-	-	-	-	30	233	-	-	233	-	-	-	-	-	-	6,141	-
2a.1.5.34	Heater Relief Valve	-	16	-	-	-	-	-	2	18	-	-	18	-	-	-	-	-	-	480	-
2a.1.5.35	Heater Vent	-	32	-	-	-	-	-	5	37	-	-	37	-	-	-	-	-	-	1,064	-
2a.1.5.36	MS Reheater Bleed Steam	-	32	-	-	-	-	-	5	36	-	-	36	-	-	-	-	-	-	1,005	-
2a.1.5.37	MS Steam Vent to Atmosphere	-	130	3	6	226	-	-	68	433	433	-	-	2,486	-	-	-	-	100,976	3,215	-
2a.1.5.38	Main Steam	-	18	-	-	-	-	-	3	20	-	-	20	-	-	-	-	-	-	554	-
2a.1.5.39	Main Steam Bypass to Condenser	-	33	-	-	-	-	-	5	38	-	-	38	-	-	-	-	-	-	1,001	-
2a.1.5.40	Main Steam RCA	-	31	1	2	59	-	-	17	109	109	-	-	647	-	-	-	-	26,288	729	-
2a.1.5.41	Main Turbine LO & Purification	-	81	-	-	-	-	-	12	93	-	-	93	-	-	-	-	-	-	2,379	-
2a.1.5.42	Main Turbine Leakoff & Steam Seal	-	29	-	-	-	-	-	4	33	-	-	33	-	-	-	-	-	-	836	-
2a.1.5.43	Main Vacuum (Shared)	-	10	-	-	-	-	-	2	12	-	-	12	-	-	-	-	-	-	315	-
2a.1.5.44	Makeup Demineralized Water (shared)	-	133	-	-	-	-	-	20	153	-	-	153	-	-	-	-	-	-	4,175	-
2a.1.5.45	Misc Embeded Piping (shared)	-	7	-	-	-	-	-	1	8	-	-	8	-	-	-	-	-	-	223	-
2a.1.5.46	Miscellaneous Equipment	-	2	-	-	-	-	-	0	2	-	-	2	-	-	-	-	-	-	55	-
2a.1.5.47	Moisture Separator Reheater Drain	-	153	-	-	-	-	-	23	175	-	-	175	-	-	-	-	-	-	4,685	-
2a.1.5.48	Nitrogen (shared)	-	21	-	-	-	-	-	3	24	-	-	24	-	-	-	-	-	-	660	-
2a.1.5.49	Recirculating Cooling Water (shared)	-	170	-	-	-	-	-	26	196	-	-	196	-	-	-	-	-	-	5,352	-
2a.1.5.50	SG Blowdown Recycle	-	314	16	22	148	125	-	137	763	763	-	-	1,632	640	-	-	-	123,615	7,954	-
2a.1.5.51	SG Wet Layup Recirculation	-	19	0	0	16	-	-	7	43	43	-	-	179	-	-	-	-	7,272	412	-
2a.1.5.52	SM Supply to Aux Equipment	-	13	-	-	-	-	-	2	15	-	-	15	-	-	-	-	-	-	390	-
2a.1.5.53	SM Supply to Aux Equipment RCA	-	3	0	0	5	-	-	2	10	10	-	-	50	-	-	-	-	2,049	82	-
2a.1.5.54	Standby Shutdown Diesel (shared)	-	21	-	-	-	-	-	3	24	-	-	24	-	-	-	-	-	-	567	-
2a.1.5.55	Steam Supply to FW Pump Turbine	-	6	-	-	-	-	-	1	7	-	-	7	-	-	-	-	-	-	189	-
2a.1.5.56	Turbine Crossover	-	95	-	-	-	-	-	14	109	-	-	109	-	-	-	-	-	-	2,632	-
2a.1.5.57	Turbine Exhaust	-	1	-	-	-	-	-	0	1	-	-	1	-	-	-	-	-	-	26	-
2a.1.5.58	Turbine Hydraulic Oil	-	69	-	-	-	-	-	10	79	-	-	79	-	-	-	-	-	-	2,043	-
2a.1.5.59	Vacuum Priming (shared)	-	79	-	-	-	-	-	12	91	-	-	91	-	-	-	-	-	-	2,478	-
2a.1.5.60	Waste Oil Storage (shared)	-	13	-	-	-	-	-	2	15	-	-	15	-	-	-	-	-	-	399	-
2a.1.5	Totals	-	3,648	44	71	2,006	125	-	1,006	6,901	3,989	-	2,911	22,057	640	-	-	-	953,091	103,874	-
2a.1.6	Scaffolding in support of decommissioning	-	803	11	3	59	7	-	213	1,095	1,095	-	-	582	36	-	-	-	29,428	25,599	-
2a.1	Subtotal Period 2a Activity Costs	1,006	16,501	12,293	6,277	6,126	21,762	488	20,906	85,357	82,446	-	2,911	56,473	46,607	2,937	459	-	8,361,142	289,594	6,477

Table C-2
McGuire Nuclear Station - Unit 2
DECON Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 2a Additional Costs																					
2a.2.1	Misc Waste	-	-	11	10	114	-	-	20	153	153	-	-	176	-	-	-	-	19,312	159	-
2a.2	Subtotal Period 2a Additional Costs	-	-	11	10	114	-	-	20	153	153	-	-	176	-	-	-	-	19,312	159	-
Period 2a Collateral Costs																					
2a.3.1	Process liquid waste	66	-	27	174	-	118	-	91	477	477	-	-	-	453	-	-	-	27,156	88	-
2a.3.2	Small tool allowance	-	218	-	-	-	-	-	33	251	225	-	25	-	-	-	-	-	-	-	-
2a.3.3	Spent Fuel Capital and Transfer	-	-	-	-	-	-	721	108	829	-	829	-	-	-	-	-	-	-	-	-
2a.3.4	Survey and Release of Scrap Metal	-	-	-	-	-	-	74	11	85	85	-	-	-	-	-	-	-	-	-	-
2a.3	Subtotal Period 2a Collateral Costs	66	218	27	174	-	118	795	243	1,641	787	829	25	-	453	-	-	-	27,156	88	-
Period 2a Period-Dependent Costs																					
2a.4.1	Decon supplies	70	-	-	-	-	-	-	18	88	88	-	-	-	-	-	-	-	-	-	-
2a.4.2	Insurance	-	-	-	-	-	-	625	63	688	688	-	-	-	-	-	-	-	-	-	-
2a.4.3	Property taxes	-	-	-	-	-	-	1,348	135	1,483	1,335	-	148	-	-	-	-	-	-	-	-
2a.4.4	Health physics supplies	-	1,795	-	-	-	-	-	449	2,244	2,244	-	-	-	-	-	-	-	-	-	-
2a.4.5	Heavy equipment rental	-	2,890	-	-	-	-	-	434	3,324	3,324	-	-	-	-	-	-	-	-	-	-
2a.4.6	Disposal of DAW generated	-	-	68	11	-	168	-	50	297	297	-	-	-	4,000	-	-	-	80,004	146	-
2a.4.7	Plant energy budget	-	-	-	-	-	-	1,977	297	2,273	2,273	-	-	-	-	-	-	-	-	-	-
2a.4.8	NRC Fees	-	-	-	-	-	-	589	59	648	648	-	-	-	-	-	-	-	-	-	-
2a.4.9	Emergency Planning Fees	-	-	-	-	-	-	504	50	554	-	554	-	-	-	-	-	-	-	-	-
2a.4.10	Spent Fuel Pool O&M	-	-	-	-	-	-	974	146	1,120	-	1,120	-	-	-	-	-	-	-	-	-
2a.4.11	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	245	37	282	282	-	-	-	-	-	-	-	-	-	-
2a.4.12	ISFSI Operating Costs	-	-	-	-	-	-	142	21	164	-	164	-	-	-	-	-	-	-	-	-
2a.4.13	Indirect Overhead	-	-	-	-	-	-	3,490	523	4,013	4,013	-	-	-	-	-	-	-	-	-	-
2a.4.14	Security Staff Cost	-	-	-	-	-	-	2,933	440	3,373	3,373	-	-	-	-	-	-	-	-	-	100,851
2a.4.15	Utility Staff Cost	-	-	-	-	-	-	32,346	4,852	37,198	37,198	-	-	-	-	-	-	-	-	-	565,586
2a.4	Subtotal Period 2a Period-Dependent Costs	70	4,685	68	11	-	168	45,173	7,573	57,748	55,762	1,838	148	-	4,000	-	-	-	80,004	146	666,437
2a.0	TOTAL PERIOD 2a COST	1,142	21,404	12,398	6,471	6,239	22,048	46,456	28,742	144,900	139,149	2,667	3,085	56,649	51,060	2,937	459	-	8,487,614	289,987	672,914
PERIOD 2b - Site Decontamination																					
Period 2b Direct Decommissioning Activities																					
Disposal of Plant Systems																					
2b.1.1.1	Admin Bldg Ventilation (shared)	-	9	-	-	-	-	-	1	10	-	-	10	-	-	-	-	-	-	267	-
2b.1.1.2	Annullus Ventilation	-	27	1	1	10	8	-	11	58	58	-	-	108	40	-	-	-	7,990	720	-
2b.1.1.3	Aux & RB Heating Water	-	328	5	9	339	-	-	135	815	815	-	-	3,726	-	-	-	-	151,327	7,576	-
2b.1.1.4	Auxiliary Building Ventilation	-	172	4	7	206	12	-	78	480	480	-	-	2,265	60	-	-	-	97,395	3,866	-
2b.1.1.5	Boron Recycle	289	313	24	30	171	177	-	299	1,304	1,304	-	-	1,885	986	-	-	-	157,572	13,832	-
2b.1.1.6	Boron Thermal Regeneration	174	271	19	24	68	152	-	208	916	916	-	-	753	782	-	-	-	100,481	10,183	-
2b.1.1.7	Breathing Air (shared)	-	18	0	0	15	-	-	7	40	40	-	-	160	-	-	-	-	6,499	486	-
2b.1.1.8	CRD Ventilation	-	76	6	6	21	35	-	32	175	175	-	-	227	177	-	-	-	25,097	1,792	-
2b.1.1.9	Chemical Volume & Control	536	736	62	75	144	487	-	613	2,652	2,652	-	-	1,580	2,597	-	-	-	287,449	30,163	-
2b.1.1.10	Component Cooling	-	106	-	-	-	-	-	16	122	-	-	122	-	-	-	-	-	-	3,267	-
2b.1.1.11	Component Cooling RCA	-	187	4	8	295	-	-	93	587	587	-	-	3,244	-	-	-	-	131,753	4,502	-
2b.1.1.12	Cont Air Release & Addition	-	34	1	2	10	11	-	13	72	72	-	-	114	57	-	-	-	9,738	892	-
2b.1.1.13	Cont Air Return Ex & H2 Skimmer	-	112	5	8	57	43	-	49	275	275	-	-	628	222	-	-	-	45,392	2,880	-
2b.1.1.14	Cont Lower Compartment Vent	-	28	1	2	46	3	-	15	94	94	-	-	505	13	-	-	-	21,724	716	-
2b.1.1.15	Cont Upper Compartment Vent	-	9	0	0	8	0	-	4	21	21	-	-	88	2	-	-	-	3,790	209	-
2b.1.1.16	Cont Vent Cooling Water (shared)	-	770	14	25	954	-	-	341	2,104	2,104	-	-	10,482	-	-	-	-	425,692	18,817	-
2b.1.1.17	Containment Purge Ventilation	-	103	11	19	245	83	-	87	547	547	-	-	2,693	425	-	-	-	147,447	2,721	-
2b.1.1.18	Control Area Ventilation	-	34	1	2	80	-	-	21	137	137	-	-	875	-	-	-	-	35,522	826	-
2b.1.1.19	Controlled Area Chilled Water (shared)	-	504	7	13	507	-	-	205	1,236	1,236	-	-	5,569	-	-	-	-	226,144	12,179	-
2b.1.1.20	Conventional Sampling	-	254	19	17	27	112	-	100	530	530	-	-	302	575	-	-	-	63,755	6,468	-
2b.1.1.21	Conventional Waste Water Treat (shared)	-	44	-	-	-	-	-	7	51	-	-	51	-	-	-	-	-	-	1,320	-
2b.1.1.22	Convntl Waste Water Treat (shared)RCA	-	135	3	5	203	-	-	65	412	412	-	-	2,230	-	-	-	-	90,563	3,268	-
2b.1.1.23	Diesel Building Ventilation	-	3	-	-	-	-	-	1	4	-	-	4	-	-	-	-	-	-	102	-

Table C-2
McGuire Nuclear Station - Unit 2
DECON Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Disposal of Plant Systems (continued)																					
2b.1.1.24	Drinking Water (shared)	-	262	-	-	-	-	-	39	302	-	-	302	-	-	-	-	-	-	8,371	-
2b.1.1.25	Electrical (clean)	-	2,628	-	-	-	-	-	394	3,023	-	-	3,023	-	-	-	-	-	-	73,972	-
2b.1.1.26	Electrical (contaminated)	-	874	35	64	391	362	-	381	2,107	2,107	-	-	4,297	1,852	-	-	-	340,711	21,733	-
2b.1.1.27	Electrical (contaminated) RCA	-	5,367	96	170	6,505	-	-	2,353	14,490	14,490	-	-	71,504	-	-	-	-	2,903,830	129,195	-
2b.1.1.28	Equipment Decon	-	34	2	2	12	13	-	14	77	77	-	-	127	68	-	-	-	11,274	825	-
2b.1.1.29	Filtered Water (shared)	-	61	-	-	-	-	-	9	70	-	-	70	-	-	-	-	-	-	1,712	-
2b.1.1.30	Filtered Water (shared) RCA	-	20	0	1	23	-	-	8	52	52	-	-	251	-	-	-	-	10,197	468	-
2b.1.1.31	Fire Protection	-	116	-	-	-	-	-	17	134	-	-	134	-	-	-	-	-	-	3,625	-
2b.1.1.32	Fire Protection (shared)	-	128	-	-	-	-	-	19	147	-	-	147	-	-	-	-	-	-	3,910	-
2b.1.1.33	Fire Protection RCA	-	360	7	13	503	-	-	168	1,052	1,052	-	-	5,527	-	-	-	-	224,455	8,906	-
2b.1.1.34	Groundwater Drainage	-	12	-	-	-	-	-	2	14	-	-	14	-	-	-	-	-	-	390	-
2b.1.1.35	Heating Boiler Feedwater (shared)	-	76	-	-	-	-	-	11	87	-	-	87	-	-	-	-	-	-	2,205	-
2b.1.1.36	Heating Boiler Fuel Gas	-	1	-	-	-	-	-	0	1	-	-	1	-	-	-	-	-	-	41	-
2b.1.1.37	ICI Room Ventilation	-	3	0	0	3	0	-	1	7	7	-	-	29	1	-	-	-	1,239	63	-
2b.1.1.38	Ice Condenser Refrigeration	-	701	12	21	814	-	-	302	1,849	1,849	-	-	8,944	-	-	-	-	363,215	16,968	-
2b.1.1.39	Incore Instrumentation Piping	-	33	1	1	-	5	-	10	50	50	-	-	-	26	-	-	-	2,337	932	-
2b.1.1.40	Instrument Air	-	221	-	-	-	-	-	33	254	-	-	254	-	-	-	-	-	-	7,048	-
2b.1.1.41	Instrument Air RCA	-	695	9	15	581	-	-	264	1,564	1,564	-	-	6,385	-	-	-	-	259,314	17,145	-
2b.1.1.42	Liquid Monitor & Disposal (shared)	-	421	39	46	100	295	-	205	1,105	1,105	-	-	1,104	1,621	-	-	-	179,947	10,505	-
2b.1.1.43	Liquid Waste Recycle	-	420	34	38	56	252	-	185	985	985	-	-	610	1,305	-	-	-	140,163	10,499	-
2b.1.1.44	Misc Service Bldg HVAC (shared)	-	18	-	-	-	-	-	3	20	-	-	20	-	-	-	-	-	-	519	-
2b.1.1.45	Miscellaneous Ventilation	-	12	-	-	-	-	-	2	13	-	-	13	-	-	-	-	-	-	381	-
2b.1.1.46	Nuclear Fuel Handling	-	49	8	13	63	77	-	44	254	254	-	-	692	394	-	-	-	63,495	1,204	-
2b.1.1.47	Nuclear Sampling	-	278	19	17	22	113	-	105	554	554	-	-	241	579	-	-	-	61,660	7,090	-
2b.1.1.48	Nuclear Service Water	-	52	-	-	-	-	-	8	59	-	-	59	-	-	-	-	-	-	1,557	-
2b.1.1.49	Nuclear Service Water RCA	-	349	11	19	712	-	-	198	1,289	1,289	-	-	7,831	-	-	-	-	318,028	8,427	-
2b.1.1.50	Nuclear Solid Waste Disposal (shared)	-	253	23	27	71	171	-	123	667	667	-	-	777	974	-	-	-	109,898	6,370	-
2b.1.1.51	Onsite Tech Support Center HVAC (shared)	-	6	-	-	-	-	-	1	7	-	-	7	-	-	-	-	-	-	189	-
2b.1.1.52	Oxygen (shared)	-	3	-	-	-	-	-	0	3	-	-	3	-	-	-	-	-	-	92	-
2b.1.1.53	Reactor Coolant	-	148	12	14	41	89	-	69	372	372	-	-	449	454	-	-	-	58,893	3,892	-
2b.1.1.54	Refueling Water	-	338	15	23	441	78	-	175	1,071	1,071	-	-	4,850	439	-	-	-	232,874	8,581	-
2b.1.1.55	Residual Heat Removal	155	168	22	31	49	200	-	183	808	808	-	-	539	1,026	-	-	-	113,845	5,863	-
2b.1.1.56	Safety Injection	-	446	46	60	324	350	-	261	1,488	1,488	-	-	3,566	1,897	-	-	-	305,552	11,159	-
2b.1.1.57	Sanitation & Waste Treatment (shared)	-	11	-	-	-	-	-	2	13	-	-	13	-	-	-	-	-	-	354	-
2b.1.1.58	Station Air (shared)	-	46	-	-	-	-	-	7	53	-	-	53	-	-	-	-	-	-	1,455	-
2b.1.1.59	Station Air (shared) RCA	-	528	6	11	417	-	-	197	1,159	1,159	-	-	4,581	-	-	-	-	186,048	12,934	-
2b.1.1.60	Turbine Building HVAC	-	114	-	-	-	-	-	17	131	-	-	131	-	-	-	-	-	-	3,772	-
2b.1.1.61	Turbine Room Sump (shared)	-	40	-	-	-	-	-	6	46	-	-	46	-	-	-	-	-	-	1,248	-
2b.1.1.62	Unwatering Pump	-	14	-	-	-	-	-	2	17	-	-	17	-	-	-	-	-	-	445	-
2b.1.1.63	Waste Gas (shared)	-	240	21	23	140	132	-	119	675	675	-	-	1,539	751	-	-	-	122,843	5,858	-
2b.1.1	Totals	1,153	19,822	603	864	14,671	3,260	-	8,339	48,711	44,129	-	4,582	161,278	17,324	-	-	-	8,045,154	526,956	-
2b.1.2	Scaffolding in support of decommissioning	-	1,004	13	3	73	9	-	266	1,368	1,368	-	-	727	45	-	-	-	36,785	31,999	-
Decontamination of Site Buildings																					
2b.1.3.1	Reactor Building	958	728	149	228	754	789	-	1,021	4,627	4,627	-	-	8,285	8,443	-	-	-	922,690	39,098	-
2b.1.3.2	AB - Cont.Material Handling Area(common)	134	85	20	30	18	41	-	108	436	436	-	-	202	1,144	-	-	-	86,965	5,152	-
2b.1.3.3	AB - Hot Mach Shop/Lab Area (common)	50	37	8	13	26	17	-	45	196	196	-	-	288	465	-	-	-	43,395	2,023	-
2b.1.3.4	Auxiliary Building	267	270	75	116	73	157	-	276	1,235	1,235	-	-	806	4,388	-	-	-	334,754	11,971	-
2b.1.3.5	Equipment Staging Building(common)	13	31	3	4	48	6	-	24	128	128	-	-	525	110	-	-	-	28,884	968	-
2b.1.3.6	Radwaste Facility(common)	1	11	4	6	1	7	-	7	36	36	-	-	6	212	-	-	-	14,855	229	-
2b.1.3.7	Retired Steam Gen.Storage Facility(com)	67	8	2	3	-	4	-	37	120	120	-	-	-	101	-	-	-	6,947	1,919	-
2b.1.3.8	Waste Solidification Building(common)	2	7	0	0	10	1	-	5	25	25	-	-	114	7	-	-	-	4,906	210	-
2b.1.3	Totals	1,493	1,176	260	400	930	1,022	-	1,522	6,803	6,803	-	-	10,226	14,871	-	-	-	1,443,395	61,571	-
2b.1	Subtotal Period 2b Activity Costs	2,646	22,002	876	1,267	15,675	4,291	-	10,127	56,883	52,301	-	4,582	172,231	32,240	-	-	-	9,525,334	620,525	-

Table C-2
McGuire Nuclear Station - Unit 2
DECON Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 2b Additional Costs																					
2b.2.1	Scaffold Storage Tent Asphalt Disposal	-	7	2	66	-	193	-	60	328	328	-	-	-	3,375	-	-	-	405,000	165	-
2b.2.2	Landfill and Firing Range Closure	-	-	-	-	-	-	818	82	900	-	-	900	-	-	-	-	-	-	-	-
2b.2.3	Pond Closures	-	-	-	-	-	-	348	52	400	-	-	400	-	-	-	-	-	-	-	-
2b.2	Subtotal Period 2b Additional Costs	-	7	2	66	-	193	1,166	194	1,628	328	-	1,300	-	3,375	-	-	-	405,000	165	-
Period 2b Collateral Costs																					
2b.3.1	Process liquid waste	145	-	113	755	-	705	-	373	2,092	2,092	-	-	-	1,914	-	-	-	162,539	373	-
2b.3.2	Small tool allowance	-	423	-	-	-	-	-	64	487	487	-	-	-	-	-	-	-	-	-	-
2b.3.3	Spent Fuel Capital and Transfer	-	-	-	-	-	-	1,622	243	1,866	-	1,866	-	-	-	-	-	-	-	-	-
2b.3.4	Survey and Release of Scrap Metal	-	-	-	-	-	-	93	14	106	106	-	-	-	-	-	-	-	-	-	-
2b.3	Subtotal Period 2b Collateral Costs	145	423	113	755	-	705	1,715	694	4,551	2,685	1,866	-	-	1,914	-	-	-	162,539	373	-
Period 2b Period-Dependent Costs																					
2b.4.1	Decon supplies	844	-	-	-	-	-	-	211	1,055	1,055	-	-	-	-	-	-	-	-	-	-
2b.4.2	Insurance	-	-	-	-	-	-	1,278	128	1,406	1,406	-	-	-	-	-	-	-	-	-	-
2b.4.3	Property taxes	-	-	-	-	-	-	2,155	216	2,371	2,371	-	-	-	-	-	-	-	-	-	-
2b.4.4	Health physics supplies	-	3,771	-	-	-	-	-	943	4,713	4,713	-	-	-	-	-	-	-	-	-	-
2b.4.5	Heavy equipment rental	-	5,865	-	-	-	-	-	880	6,745	6,745	-	-	-	-	-	-	-	-	-	-
2b.4.6	Disposal of DAW generated	-	-	141	23	-	352	-	105	621	621	-	-	-	8,355	-	-	-	167,100	304	-
2b.4.7	Plant energy budget	-	-	-	-	-	-	3,190	479	3,669	3,669	-	-	-	-	-	-	-	-	-	-
2b.4.8	NRC Fees	-	-	-	-	-	-	1,204	120	1,324	1,324	-	-	-	-	-	-	-	-	-	-
2b.4.9	Emergency Planning Fees	-	-	-	-	-	-	1,030	103	1,132	-	1,132	-	-	-	-	-	-	-	-	-
2b.4.10	Spent Fuel Pool O&M	-	-	-	-	-	-	1,991	299	2,290	-	2,290	-	-	-	-	-	-	-	-	-
2b.4.11	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	501	75	576	576	-	-	-	-	-	-	-	-	-	-
2b.4.12	ISFSI Operating Costs	-	-	-	-	-	-	291	44	335	-	335	-	-	-	-	-	-	-	-	-
2b.4.13	Indirect Overhead	-	-	-	-	-	-	6,824	1,024	7,847	7,847	-	-	-	-	-	-	-	-	-	-
2b.4.14	Security Staff Cost	-	-	-	-	-	-	5,996	899	6,896	6,896	-	-	-	-	-	-	-	-	-	206,143
2b.4.15	Utility Staff Cost	-	-	-	-	-	-	63,422	9,513	72,935	72,935	-	-	-	-	-	-	-	-	-	1,105,929
2b.4	Subtotal Period 2b Period-Dependent Costs	844	9,636	141	23	-	352	87,882	15,038	113,914	110,157	3,757	-	-	8,355	-	-	-	167,100	304	1,312,071
2b.0	TOTAL PERIOD 2b COST	3,634	32,069	1,133	2,110	15,675	5,541	90,763	26,052	176,977	165,471	5,623	5,883	172,231	45,884	-	-	-	10,259,970	621,367	1,312,071
PERIOD 2c - Delay before Wet Fuel Storage Decontamination																					
Period 2c Additional Costs																					
2c.2.1	Landfill Post Closure Maintenance	-	-	-	-	-	-	252	25	277	-	-	277	-	-	-	-	-	-	-	-
2c.2	Subtotal Period 2c Additional Costs	-	-	-	-	-	-	252	25	277	-	-	277	-	-	-	-	-	-	-	-
Period 2c Collateral Costs																					
2c.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	5,525	829	6,354	-	6,354	-	-	-	-	-	-	-	-	-
2c.3	Subtotal Period 2c Collateral Costs	-	-	-	-	-	-	5,525	829	6,354	-	6,354	-	-	-	-	-	-	-	-	-
Period 2c Period-Dependent Costs																					
2c.4.1	Insurance	-	-	-	-	-	-	3,630	363	3,993	-	3,993	-	-	-	-	-	-	-	-	-
2c.4.2	Property taxes	-	-	-	-	-	-	1,085	109	1,194	-	1,194	-	-	-	-	-	-	-	-	-
2c.4.3	Health physics supplies	-	733	-	-	-	-	-	183	916	-	916	-	-	-	-	-	-	-	-	-
2c.4.4	Disposal of DAW generated	-	-	16	3	-	40	-	12	71	-	71	-	-	958	-	-	-	19,152	35	-
2c.4.5	Plant energy budget	-	-	-	-	-	-	2,417	363	2,779	-	2,779	-	-	-	-	-	-	-	-	-
2c.4.6	NRC Fees	-	-	-	-	-	-	1,295	129	1,424	-	1,424	-	-	-	-	-	-	-	-	-
2c.4.7	Emergency Planning Fees	-	-	-	-	-	-	2,925	292	3,217	-	3,217	-	-	-	-	-	-	-	-	-
2c.4.8	Spent Fuel Pool O&M	-	-	-	-	-	-	5,657	849	6,506	-	6,506	-	-	-	-	-	-	-	-	-
2c.4.9	ISFSI Operating Costs	-	-	-	-	-	-	827	124	951	-	951	-	-	-	-	-	-	-	-	-
2c.4.10	Indirect Overhead	-	-	-	-	-	-	2,832	425	3,257	-	3,257	-	-	-	-	-	-	-	-	-
2c.4.11	Security Staff Cost	-	-	-	-	-	-	13,895	2,084	15,980	-	15,980	-	-	-	-	-	-	-	-	462,986
2c.4.12	Utility Staff Cost	-	-	-	-	-	-	25,706	3,856	29,561	-	29,561	-	-	-	-	-	-	-	-	459,029
2c.4	Subtotal Period 2c Period-Dependent Costs	-	733	16	3	-	40	60,269	8,789	69,850	-	69,850	-	-	958	-	-	-	19,152	35	922,014
2c.0	TOTAL PERIOD 2c COST	-	733	16	3	-	40	66,046	9,643	76,482	-	76,205	277	-	958	-	-	-	19,152	35	922,014

Table C-2
McGuire Nuclear Station - Unit 2
DECON Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 2d - Decontamination Following Wet Fuel Storage																					
Period 2d Direct Decommissioning Activities																					
2d.1.1	Remove spent fuel racks	351	36	137	79	-	534	-	343	1,480	1,480	-	-	-	2,732	-	-	-	245,101	1,066	-
Disposal of Plant Systems																					
2d.1.2.1	FHB Ventilation	-	40	1	2	48	3	-	18	111	111	-	-	522	14	-	-	-	22,462	888	-
2d.1.2.2	Spent Fuel Cooling	148	232	18	24	80	152	-	188	843	843	-	-	884	778	-	-	-	105,644	8,495	-
2d.1.2	Totals	148	272	19	26	128	155	-	206	954	954	-	-	1,406	792	-	-	-	128,106	9,383	-
Decontamination of Site Buildings																					
2d.1.3.1	Fuel Building	616	719	21	31	276	47	-	548	2,258	2,258	-	-	3,035	972	-	-	-	190,450	31,364	-
2d.1.3	Totals	616	719	21	31	276	47	-	548	2,258	2,258	-	-	3,035	972	-	-	-	190,450	31,364	-
2d.1.4	Scaffolding in support of decommissioning	-	201	3	1	15	2	-	53	274	274	-	-	145	9	-	-	-	7,357	6,400	-
2d.1	Subtotal Period 2d Activity Costs	1,115	1,227	180	137	419	737	-	1,150	4,965	4,965	-	-	4,587	4,505	-	-	-	571,014	48,213	-
Period 2d Additional Costs																					
2d.2.1	License Termination Survey Program Management	-	-	-	-	-	-	616	185	801	801	-	-	-	-	-	-	-	-	-	6,240
2d.2.2	Landfill Post Closure Maintenance	-	-	-	-	-	-	13	1	14	-	-	14	-	-	-	-	-	-	-	-
2d.2	Subtotal Period 2d Additional Costs	-	-	-	-	-	-	629	186	815	801	-	14	-	-	-	-	-	-	-	6,240
Period 2d Collateral Costs																					
2d.3.1	Process liquid waste	124	-	60	396	-	304	-	203	1,088	1,088	-	-	-	1,020	-	-	-	70,092	199	-
2d.3.2	Small tool allowance	-	42	-	-	-	-	-	6	48	48	-	-	-	-	-	-	-	-	-	-
2d.3.3	Decommissioning Equipment Disposition	-	-	109	30	605	73	-	124	942	942	-	-	6,000	373	-	-	-	303,507	88	-
2d.3.4	Spent Fuel Capital and Transfer	-	-	-	-	-	-	236	35	271	-	271	-	-	-	-	-	-	-	-	-
2d.3.5	Survey and Release of Scrap Metal	-	-	-	-	-	-	19	3	21	21	-	-	-	-	-	-	-	-	-	-
2d.3	Subtotal Period 2d Collateral Costs	124	42	170	426	605	377	254	372	2,370	2,099	271	-	6,000	1,394	-	-	-	373,599	287	-
Period 2d Period-Dependent Costs																					
2d.4.1	Decon supplies	125	-	-	-	-	-	-	31	157	157	-	-	-	-	-	-	-	-	-	-
2d.4.2	Insurance	-	-	-	-	-	-	145	15	160	160	-	-	-	-	-	-	-	-	-	-
2d.4.3	Property taxes	-	-	-	-	-	-	0	0	1	1	-	-	-	-	-	-	-	-	-	-
2d.4.4	Health physics supplies	-	324	-	-	-	-	-	81	404	404	-	-	-	-	-	-	-	-	-	-
2d.4.5	Heavy equipment rental	-	668	-	-	-	-	-	100	768	768	-	-	-	-	-	-	-	-	-	-
2d.4.6	Disposal of DAW generated	-	-	20	3	-	49	-	15	86	86	-	-	-	1,155	-	-	-	23,109	42	-
2d.4.7	Plant energy budget	-	-	-	-	-	-	194	29	223	223	-	-	-	-	-	-	-	-	-	-
2d.4.8	NRC Fees	-	-	-	-	-	-	137	14	151	151	-	-	-	-	-	-	-	-	-	-
2d.4.9	Emergency Planning Fees	-	-	-	-	-	-	117	12	129	-	129	-	-	-	-	-	-	-	-	-
2d.4.10	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	114	17	131	131	-	-	-	-	-	-	-	-	-	-
2d.4.11	ISFSI Operating Costs	-	-	-	-	-	-	33	5	38	-	38	-	-	-	-	-	-	-	-	-
2d.4.12	Indirect Overhead	-	-	-	-	-	-	534	80	614	614	-	-	-	-	-	-	-	-	-	-
2d.4.13	Security Staff Cost	-	-	-	-	-	-	378	57	435	435	-	-	-	-	-	-	-	-	-	11,500
2d.4.14	Utility Staff Cost	-	-	-	-	-	-	5,123	768	5,891	5,891	-	-	-	-	-	-	-	-	-	86,580
2d.4	Subtotal Period 2d Period-Dependent Costs	125	991	20	3	-	49	6,776	1,223	9,188	9,021	167	-	-	1,155	-	-	-	23,109	42	98,080
2d.0	TOTAL PERIOD 2d COST	1,365	2,260	369	566	1,023	1,163	7,660	2,932	17,338	16,886	438	14	10,587	7,054	-	-	-	967,722	48,542	104,320
PERIOD 2e - License Termination																					
Period 2e Direct Decommissioning Activities																					
2e.1.1	ORISE confirmatory survey	-	-	-	-	-	-	150	45	195	195	-	-	-	-	-	-	-	-	-	-
2e.1.2	Terminate license									a											
2e.1	Subtotal Period 2e Activity Costs	-	-	-	-	-	-	150	45	195	195	-	-	-	-	-	-	-	-	-	-

Table C-2
McGuire Nuclear Station - Unit 2
DECON Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 2e Additional Costs																					
2e.2.1	License Termination Survey	-	-	-	-	-	-	8,853	2,656	11,509	11,509	-	-	-	-	-	-	-	-	212,278	3,120
2e.2.2	Landfill Post Closure Maintenance	-	-	-	-	-	-	31	3	34	-	-	34	-	-	-	-	-	-	-	-
2e.2	Subtotal Period 2e Additional Costs	-	-	-	-	-	-	8,884	2,659	11,543	11,509	-	34	-	-	-	-	-	-	212,278	3,120
Period 2e Collateral Costs																					
2e.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	162	24	187	-	187	-	-	-	-	-	-	-	-	-
2e.3	Subtotal Period 2e Collateral Costs	-	-	-	-	-	-	162	24	187	-	187	-	-	-	-	-	-	-	-	-
Period 2e Period-Dependent Costs																					
2e.4.1	Insurance	-	-	-	-	-	-	329	33	361	361	-	-	-	-	-	-	-	-	-	-
2e.4.2	Property taxes	-	-	-	-	-	-	1	0	1	1	-	-	-	-	-	-	-	-	-	-
2e.4.3	Health physics supplies	-	1,155	-	-	-	-	-	289	1,443	1,443	-	-	-	-	-	-	-	-	-	-
2e.4.4	Disposal of DAW generated	-	-	6	1	-	15	-	4	26	26	-	-	-	349	-	-	-	6,979	13	-
2e.4.5	Plant energy budget	-	-	-	-	-	-	240	36	276	276	-	-	-	-	-	-	-	-	-	-
2e.4.6	NRC Fees	-	-	-	-	-	-	355	35	390	390	-	-	-	-	-	-	-	-	-	-
2e.4.7	Emergency Planning Fees	-	-	-	-	-	-	38	4	41	-	41	-	-	-	-	-	-	-	-	-
2e.4.8	ISFSI Operating Costs	-	-	-	-	-	-	82	12	94	-	94	-	-	-	-	-	-	-	-	-
2e.4.9	Indirect Overhead	-	-	-	-	-	-	790	119	909	909	-	-	-	-	-	-	-	-	-	-
2e.4.10	Security Staff Cost	-	-	-	-	-	-	922	138	1,060	1,060	-	-	-	-	-	-	-	-	-	27,893
2e.4.11	Utility Staff Cost	-	-	-	-	-	-	7,958	1,194	9,152	9,152	-	-	-	-	-	-	-	-	-	128,071
2e.4	Subtotal Period 2e Period-Dependent Costs	-	1,155	6	1	-	15	10,714	1,864	13,755	13,619	136	-	-	349	-	-	-	6,979	13	155,964
2e.0	TOTAL PERIOD 2e COST	-	1,155	6	1	-	15	19,911	4,592	25,679	25,323	322	34	-	349	-	-	-	6,979	212,291	159,084
PERIOD 2 TOTALS		6,141	57,620	13,922	9,151	22,937	28,807	230,835	71,961	441,376	346,829	85,255	9,293	239,466	105,304	2,937	459	-	19,741,440	1,172,222	3,170,404
PERIOD 3b - Site Restoration																					
Period 3b Direct Decommissioning Activities																					
Demolition of Remaining Site Buildings																					
3b.1.1.1	Reactor Building	-	2,706	-	-	-	-	-	406	3,112	-	-	3,112	-	-	-	-	-	-	40,056	-
3b.1.1.2	AB - Aux FW Pump/Pntrtn Rm/Swtchgr Rm	-	494	-	-	-	-	-	74	568	-	-	568	-	-	-	-	-	-	6,724	-
3b.1.1.3	AB - Cable & Battery Rooms(common)	-	176	-	-	-	-	-	26	202	-	-	202	-	-	-	-	-	-	2,463	-
3b.1.1.4	AB - Cont.Material Handling Area(common)	-	350	-	-	-	-	-	53	403	-	-	403	-	-	-	-	-	-	6,320	-
3b.1.1.5	AB - Hot Mach Shop/Lab Area (common)	-	447	-	-	-	-	-	67	513	-	-	513	-	-	-	-	-	-	7,553	-
3b.1.1.6	AB - Office Addition(common)	-	3	-	-	-	-	-	1	4	-	-	4	-	-	-	-	-	-	93	-
3b.1.1.7	Auxiliary Building	-	1,642	-	-	-	-	-	246	1,888	-	-	1,888	-	-	-	-	-	-	23,480	-
3b.1.1.8	Diesel Generator Building	-	135	-	-	-	-	-	20	155	-	-	155	-	-	-	-	-	-	1,794	-
3b.1.1.9	Equipment Staging Building(common)	-	195	-	-	-	-	-	29	225	-	-	225	-	-	-	-	-	-	2,739	-
3b.1.1.10	Intake & Discharge Structures & Piping	-	1,563	-	-	-	-	-	234	1,797	-	-	1,797	-	-	-	-	-	-	24,110	-
3b.1.1.11	Low Level Intake Pump Struc. Piping(com)	-	510	-	-	-	-	-	77	587	-	-	587	-	-	-	-	-	-	8,644	-
3b.1.1.12	Main Steam Doghouse	-	430	-	-	-	-	-	64	494	-	-	494	-	-	-	-	-	-	5,450	-
3b.1.1.13	Miscellaneous Site Structures(common)	-	6,102	-	-	-	-	-	915	7,018	-	-	7,018	-	-	-	-	-	-	91,540	-
3b.1.1.14	Radwaste Facility(common)	-	130	-	-	-	-	-	19	149	-	-	149	-	-	-	-	-	-	2,171	-
3b.1.1.15	Retired Steam Gen.Storage Facility(com)	-	616	-	-	-	-	-	92	708	-	-	708	-	-	-	-	-	-	9,317	-
3b.1.1.16	Service Building(common)	-	1,294	-	-	-	-	-	194	1,488	-	-	1,488	-	-	-	-	-	-	20,666	-
3b.1.1.17	Settling and Holding Ponds(common)	-	15	-	-	-	-	-	2	17	-	-	17	-	-	-	-	-	-	230	-
3b.1.1.18	Standby Shutdown Facility(common)	-	69	-	-	-	-	-	10	79	-	-	79	-	-	-	-	-	-	1,308	-
3b.1.1.19	Turbine Building	-	2,891	-	-	-	-	-	434	3,324	-	-	3,324	-	-	-	-	-	-	51,808	-
3b.1.1.20	Turbine Pedestal	-	670	-	-	-	-	-	101	771	-	-	771	-	-	-	-	-	-	8,172	-
3b.1.1.21	Waste Solidification Building(common)	-	74	-	-	-	-	-	11	85	-	-	85	-	-	-	-	-	-	1,054	-
3b.1.1.22	Fuel Building	-	544	-	-	-	-	-	82	626	-	-	626	-	-	-	-	-	-	8,332	-
3b.1.1	Totals	-	21,055	-	-	-	-	-	3,158	24,213	-	-	24,213	-	-	-	-	-	-	324,024	-
Site Closeout Activities																					
3b.1.2	BackFill Site	-	3,894	-	-	-	-	-	584	4,478	-	-	4,478	-	-	-	-	-	-	14,298	-
3b.1.3	Grade & landscape site	-	174	-	-	-	-	-	26	200	-	-	200	-	-	-	-	-	-	428	-

Table C-2
McGuire Nuclear Station - Unit 2
DECON Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes: Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
3b.1.4	Final report to NRC	-	-	-	-	-	-	45	7	52	52	-	-	-	-	-	-	-	-	-	671
3b.1	Subtotal Period 3b Activity Costs	-	25,123	-	-	-	-	45	3,775	28,943	52	-	28,891	-	-	-	-	-	-	338,751	671
Period 3b Additional Costs																					
3b.2.1	Concrete Crushing	-	804	-	-	-	-	5	121	931	-	-	931	-	-	-	-	-	-	4,075	-
3b.2.2	Landfill Post Closure Maintenance	-	-	-	-	-	-	69	7	76	-	-	76	-	-	-	-	-	-	-	-
3b.2	Subtotal Period 3b Additional Costs	-	804	-	-	-	-	75	128	1,007	-	-	1,007	-	-	-	-	-	-	4,075	-
Period 3b Collateral Costs																					
3b.3.1	Small tool allowance	-	244	-	-	-	-	-	37	280	-	-	280	-	-	-	-	-	-	-	-
3b.3.2	Spent Fuel Capital and Transfer	-	-	-	-	-	-	191	29	219	-	219	-	-	-	-	-	-	-	-	-
3b.3	Subtotal Period 3b Collateral Costs	-	244	-	-	-	-	191	65	500	-	219	280	-	-	-	-	-	-	-	-
Period 3b Period-Dependent Costs																					
3b.4.1	Insurance	-	-	-	-	-	-	731	73	804	0	724	80	-	-	-	-	-	-	-	-
3b.4.2	Property taxes	-	-	-	-	-	-	3	0	3	-	-	3	-	-	-	-	-	-	-	-
3b.4.3	Heavy equipment rental	-	4,933	-	-	-	-	-	740	5,673	-	-	5,673	-	-	-	-	-	-	-	-
3b.4.4	Plant energy budget	-	-	-	-	-	-	267	40	307	0	276	31	-	-	-	-	-	-	-	-
3b.4.5	NRC ISFSI Fees	-	-	-	-	-	-	625	62	687	-	687	-	-	-	-	-	-	-	-	-
3b.4.6	Emergency Planning Fees	-	-	-	-	-	-	84	8	92	-	92	-	-	-	-	-	-	-	-	-
3b.4.7	ISFSI Operating Costs	-	-	-	-	-	-	183	27	210	-	210	-	-	-	-	-	-	-	-	-
3b.4.8	Indirect Overhead	-	-	-	-	-	-	1,235	185	1,421	1,421	-	-	-	-	-	-	-	-	-	-
3b.4.9	Security Staff Cost	-	-	-	-	-	-	1,974	296	2,270	-	1,589	681	-	-	-	-	-	-	-	59,032
3b.4.10	Utility Staff Cost	-	-	-	-	-	-	12,161	1,824	13,985	0	12,587	1,399	-	-	-	-	-	-	-	200,211
3b.4	Subtotal Period 3b Period-Dependent Costs	-	4,933	-	-	-	-	17,262	3,257	25,453	1,421	16,166	7,867	-	-	-	-	-	-	-	259,243
3b.0	TOTAL PERIOD 3b COST	-	31,104	-	-	-	-	17,573	7,226	55,903	1,473	16,385	38,045	-	-	-	-	-	-	342,826	259,914
PERIOD 3c - Fuel Storage Operations/Shipping																					
Period 3c Additional Costs																					
3c.2.1	Landfill Post Closure Maintenance	-	-	-	-	-	-	185	19	204	-	-	204	-	-	-	-	-	-	-	-
3c.2	Subtotal Period 3c Additional Costs	-	-	-	-	-	-	185	19	204	-	-	204	-	-	-	-	-	-	-	-
Period 3c Collateral Costs																					
3c.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	763	114	878	-	878	-	-	-	-	-	-	-	-	-
3c.3	Subtotal Period 3c Collateral Costs	-	-	-	-	-	-	763	114	878	-	878	-	-	-	-	-	-	-	-	-
Period 3c Period-Dependent Costs																					
3c.4.1	Insurance	-	-	-	-	-	-	1,301	130	1,431	-	1,431	-	-	-	-	-	-	-	-	-
3c.4.2	Property taxes	-	-	-	-	-	-	4	0	5	-	5	-	-	-	-	-	-	-	-	-
3c.4.3	Plant energy budget	-	-	-	-	-	-	475	71	546	-	546	-	-	-	-	-	-	-	-	-
3c.4.4	NRC ISFSI Fees	-	-	-	-	-	-	1,112	111	1,223	-	1,223	-	-	-	-	-	-	-	-	-
3c.4.5	Emergency Planning Fees	-	-	-	-	-	-	298	30	328	-	328	-	-	-	-	-	-	-	-	-
3c.4.6	ISFSI Operating Costs	-	-	-	-	-	-	325	49	374	-	374	-	-	-	-	-	-	-	-	-
3c.4.7	Indirect Overhead	-	-	-	-	-	-	259	39	298	-	298	-	-	-	-	-	-	-	-	-
3c.4.8	Security Staff Cost	-	-	-	-	-	-	5,948	892	6,840	-	6,840	-	-	-	-	-	-	-	-	-
3c.4.9	Utility Staff Cost	-	-	-	-	-	-	2,420	363	2,783	-	2,783	-	-	-	-	-	-	-	-	168,017
3c.4	Subtotal Period 3c Period-Dependent Costs	-	-	-	-	-	-	12,143	1,686	13,829	-	13,829	-	-	-	-	-	-	-	-	42,004
3c.0	TOTAL PERIOD 3c COST	-	-	-	-	-	-	13,092	1,819	14,911	-	14,707	204	-	-	-	-	-	-	-	210,021
PERIOD 3d - GTCC shipping																					
Period 3d Direct Decommissioning Activities																					
Nuclear Steam Supply System Removal																					
3d.1.1.1	Vessel & Internals GTCC Disposal	-	-	625	-	-	14,761	-	2,277	17,663	17,663	-	-	-	-	-	-	666	129,800	-	-
3d.1.1	Totals	-	-	625	-	-	14,761	-	2,277	17,663	17,663	-	-	-	-	-	-	666	129,800	-	-

Table C-2
McGuire Nuclear Station - Unit 2
DECON Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
3d.1	Subtotal Period 3d Activity Costs	-	-	625	-	-	14,761	-	2,277	17,663	17,663	-	-	-	-	-	-	666	129,800	-	-
Period 3d Additional Costs																					
3d.2.1	Landfill Post Closure Maintenance	-	-	-	-	-	-	2	0	2	-	-	2	-	-	-	-	-	-	-	-
3d.2	Subtotal Period 3d Additional Costs	-	-	-	-	-	-	2	0	2	-	-	2	-	-	-	-	-	-	-	-
Period 3d Period-Dependent Costs																					
3d.4.1	Insurance	-	-	-	-	-	-	17	2	18	-	18	-	-	-	-	-	-	-	-	-
3d.4.2	Property taxes	-	-	-	-	-	-	0	0	0	-	0	-	-	-	-	-	-	-	-	-
3d.4.3	Plant energy budget	-	-	-	-	-	-	6	1	7	-	7	-	-	-	-	-	-	-	-	-
3d.4.4	NRC ISFSI Fees	-	-	-	-	-	-	8	1	8	-	8	-	-	-	-	-	-	-	-	-
3d.4.5	Emergency Planning Fees	-	-	-	-	-	-	4	0	4	-	4	-	-	-	-	-	-	-	-	-
3d.4.6	ISFSI Operating Costs	-	-	-	-	-	-	4	1	5	-	5	-	-	-	-	-	-	-	-	-
3d.4.7	Indirect Overhead	-	-	-	-	-	-	3	0	4	-	4	-	-	-	-	-	-	-	-	-
3d.4.8	Security Staff Cost	-	-	-	-	-	-	76	11	88	-	88	-	-	-	-	-	-	-	-	2,160
3d.4.9	Utility Staff Cost	-	-	-	-	-	-	31	5	36	-	36	-	-	-	-	-	-	-	-	540
3d.4	Subtotal Period 3d Period-Dependent Costs	-	-	-	-	-	-	149	21	170	-	170	-	-	-	-	-	-	-	-	2,700
3d.0	TOTAL PERIOD 3d COST	-	-	625	-	-	14,761	151	2,298	17,835	17,663	170	2	-	-	-	-	666	129,800	-	2,700
PERIOD 3e - ISFSI Decontamination																					
Period 3e Additional Costs																					
3e.2.1	Landfill Post Closure Maintenance	-	-	-	-	-	-	14	1	15	-	-	15	-	-	-	-	-	-	-	-
3e.2.2	ISFSI License Termination	-	771	3	269	-	357	1,253	510	3,163	-	3,163	-	-	6,961	-	-	-	961,714	16,599	-
3e.2	Subtotal Period 3e Additional Costs	-	771	3	269	-	357	1,266	512	3,178	-	3,163	15	-	6,961	-	-	-	961,714	16,599	-
Period 3e Collateral Costs																					
3e.3.1	Small tool allowance	-	8	-	-	-	-	-	1	10	-	10	-	-	-	-	-	-	-	-	-
3e.3	Subtotal Period 3e Collateral Costs	-	8	-	-	-	-	-	1	10	-	10	-	-	-	-	-	-	-	-	-
Period 3e Period-Dependent Costs																					
3e.4.1	Insurance	-	-	-	-	-	-	147	15	162	-	162	-	-	-	-	-	-	-	-	-
3e.4.2	Property taxes	-	-	-	-	-	-	1	0	1	-	1	-	-	-	-	-	-	-	-	-
3e.4.3	Heavy equipment rental	-	295	-	-	-	-	-	44	340	-	340	-	-	-	-	-	-	-	-	-
3e.4.4	Plant energy budget	-	-	-	-	-	-	54	8	62	-	62	-	-	-	-	-	-	-	-	-
3e.4.5	NRC ISFSI Fees	-	-	-	-	-	-	66	7	73	-	73	-	-	-	-	-	-	-	-	-
3e.4.6	Indirect Overhead	-	-	-	-	-	-	24	4	27	-	27	-	-	-	-	-	-	-	-	-
3e.4.7	Security Staff Cost	-	-	-	-	-	-	188	28	216	-	216	-	-	-	-	-	-	-	-	5,096
3e.4.8	Utility Staff Cost	-	-	-	-	-	-	227	34	261	-	261	-	-	-	-	-	-	-	-	3,866
3e.4	Subtotal Period 3e Period-Dependent Costs	-	295	-	-	-	-	706	139	1,140	-	1,140	-	-	-	-	-	-	-	-	8,961
3e.0	TOTAL PERIOD 3e COST	-	1,075	3	269	-	357	1,972	652	4,328	-	4,312	15	-	6,961	-	-	-	961,714	16,599	8,961
PERIOD 3f - ISFSI Site Restoration																					
Period 3f Additional Costs																					
3f.2.1	Landfill Maintenance Perpetuity	-	-	-	-	-	-	262	26	288	-	-	288	-	-	-	-	-	-	-	-
3f.2.2	ISFSI Demolition and Restoration	-	1,953	-	-	-	-	43	299	2,295	-	2,295	-	-	-	-	-	-	-	13,975	160
3f.2	Subtotal Period 3f Additional Costs	-	1,953	-	-	-	-	305	326	2,583	-	2,295	288	-	-	-	-	-	-	13,975	160
Period 3f Collateral Costs																					
3f.3.1	Small tool allowance	-	10	-	-	-	-	-	2	12	-	12	-	-	-	-	-	-	-	-	-
3f.3	Subtotal Period 3f Collateral Costs	-	10	-	-	-	-	-	2	12	-	12	-	-	-	-	-	-	-	-	-
Period 3f Period-Dependent Costs																					
3f.4.1	Insurance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3f.4.2	Property taxes	-	-	-	-	-	-	0	0	0	-	0	-	-	-	-	-	-	-	-	-
3f.4.3	Heavy equipment rental	-	97	-	-	-	-	-	15	111	-	111	-	-	-	-	-	-	-	-	-

Table C-2
McGuire Nuclear Station - Unit 2
DECON Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
Period 3f Period-Dependent Costs (continued)																					
3f.4.4	Plant energy budget	-	-	-	-	-	-	27	4	31	-	31	-	-	-	-	-	-	-	-	-
3f.4.5	Indirect Overhead	-	-	-	-	-	-	10	1	11	-	11	-	-	-	-	-	-	-	-	-
3f.4.6	Security Staff Cost	-	-	-	-	-	-	93	14	107	-	107	-	-	-	-	-	-	-	-	2,527
3f.4.7	Utility Staff Cost	-	-	-	-	-	-	95	14	109	-	109	-	-	-	-	-	-	-	-	1,569
3f.4	Subtotal Period 3f Period-Dependent Costs	-	97	-	-	-	-	224	48	369	-	369	-	-	-	-	-	-	-	-	4,096
3f.0	TOTAL PERIOD 3f COST	-	2,060	-	-	-	-	529	375	2,964	-	2,676	288	-	-	-	-	-	-	13,975	4,256
PERIOD 3 TOTALS		-	34,239	628	269	-	15,118	33,317	12,370	95,940	19,136	38,250	38,555	-	6,961	-	-	666	1,091,514	373,400	485,853
TOTAL COST TO DECOMMISSION		8,986	94,226	14,622	9,796	22,937	46,299	329,510	95,769	622,146	447,859	126,079	48,207	239,466	113,356	3,687	459	666	20,945,370	1,555,070	4,443,968

TOTAL COST TO DECOMMISSION WITH 18.19% CONTINGENCY:	**$622,146**	**thousands of 2008 dollars**
TOTAL NRC LICENSE TERMINATION COST IS 71.99% OR:	**$447,859**	**thousands of 2008 dollars**
SPENT FUEL MANAGEMENT COST IS 20.27% OR:	**$126,079**	**thousands of 2008 dollars**
NON-NUCLEAR DEMOLITION COST IS 7.75% OR:	**$48,207**	**thousands of 2008 dollars**
TOTAL LOW-LEVEL RADIOACTIVE WASTE VOLUME BURIED (EXCLUDING GTCC):	**117,502**	**cubic feet**
TOTAL GREATER THAN CLASS C RADWASTE VOLUME GENERATED:	**666**	**cubic feet**
TOTAL SCRAP METAL REMOVED:	**57,819**	**tons**
TOTAL CRAFT LABOR REQUIREMENTS:	**1,555,070**	**man-hours**

End Notes.
n/a - indicates that this activity not charged as decommissioning expense.
a - indicates that this activity performed by decommissioning staff.
0 - indicates that this value is less than 0.5 but is non-zero.
a cell containing " - " indicates a zero value

APPENDIX D

DETAILED COST ANALYSIS

SAFSTOR

Table D-1
McGuire Nuclear Station - Unit 1
SAFSTOR Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes: Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt, Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 1a - Shutdown through Transition																					
Period 1a Direct Decommissioning Activities																					
1a.1.1	SAFSTOR site characterization survey	-	-	-	-	-	-	383	115	498	498	-	-	-	-	-	-	-	-	-	-
1a.1.2	Prepare preliminary decommissioning cost	-	-	-	-	-	-	88	13	101	101	-	-	-	-	-	-	-	-	-	1,300
1a.1.3	Notification of Cessation of Operations									a											
1a.1.4	Remove fuel & source material									n/a											
1a.1.5	Notification of Permanent Defueling									a											
1a.1.6	Deactivate plant systems & process waste									a											
1a.1.7	Prepare and submit PSDAR	-	-	-	-	-	-	135	20	156	156	-	-	-	-	-	-	-	-	-	2,000
1a.1.8	Review plant dwgs & specs.	-	-	-	-	-	-	88	13	101	101	-	-	-	-	-	-	-	-	-	1,300
1a.1.9	Perform detailed rad survey									a											
1a.1.10	Estimate by-product inventory	-	-	-	-	-	-	68	10	78	78	-	-	-	-	-	-	-	-	-	1,000
1a.1.11	End product description	-	-	-	-	-	-	68	10	78	78	-	-	-	-	-	-	-	-	-	1,000
1a.1.12	Detailed by-product inventory	-	-	-	-	-	-	101	15	117	117	-	-	-	-	-	-	-	-	-	1,500
1a.1.13	Define major work sequence	-	-	-	-	-	-	68	10	78	78	-	-	-	-	-	-	-	-	-	1,000
1a.1.14	Perform SER and EA	-	-	-	-	-	-	210	31	241	241	-	-	-	-	-	-	-	-	-	3,100
1a.1.15	Perform Site-Specific Cost Study	-	-	-	-	-	-	338	51	389	389	-	-	-	-	-	-	-	-	-	5,000
Activity Specifications																					
1a.1.16.1	Prepare plant and facilities for SAFSTOR	-	-	-	-	-	-	333	50	383	383	-	-	-	-	-	-	-	-	-	4,920
1a.1.16.2	Plant systems	-	-	-	-	-	-	282	42	324	324	-	-	-	-	-	-	-	-	-	4,167
1a.1.16.3	Plant structures and buildings	-	-	-	-	-	-	211	32	243	243	-	-	-	-	-	-	-	-	-	3,120
1a.1.16.4	Waste management	-	-	-	-	-	-	135	20	156	156	-	-	-	-	-	-	-	-	-	2,000
1a.1.16.5	Facility and site dormancy	-	-	-	-	-	-	135	20	156	156	-	-	-	-	-	-	-	-	-	2,000
1a.1.16	Total	-	-	-	-	-	-	1,096	164	1,260	1,260	-	-	-	-	-	-	-	-	-	16,207
Detailed Work Procedures																					
1a.1.17.1	Plant systems	-	-	-	-	-	-	80	12	92	92	-	-	-	-	-	-	-	-	-	1,183
1a.1.17.2	Facility closeout & dormancy	-	-	-	-	-	-	81	12	93	93	-	-	-	-	-	-	-	-	-	1,200
1a.1.17	Total	-	-	-	-	-	-	161	24	185	185	-	-	-	-	-	-	-	-	-	2,383
1a.1.18	Procure vacuum drying system	-	-	-	-	-	-	7	1	8	8	-	-	-	-	-	-	-	-	-	100
1a.1.19	Drain/de-energize non-cont. systems									a											
1a.1.20	Drain & dry NSSS									a											
1a.1.21	Drain/de-energize contaminated systems									a											
1a.1.22	Decon/secure contaminated systems									a											
1a.1	Subtotal Period 1a Activity Costs	-	-	-	-	-	-	2,810	479	3,290	3,290	-	-	-	-	-	-	-	-	-	35,890
Period 1a Period-Dependent Costs																					
1a.4.1	Insurance	-	-	-	-	-	-	1,064	106	1,171	1,171	-	-	-	-	-	-	-	-	-	-
1a.4.2	Property taxes	-	-	-	-	-	-	1,381	138	1,519	1,519	-	-	-	-	-	-	-	-	-	-
1a.4.3	Health physics supplies	-	452	-	-	-	-	-	113	565	565	-	-	-	-	-	-	-	-	-	-
1a.4.4	Heavy equipment rental	-	460	-	-	-	-	-	69	529	529	-	-	-	-	-	-	-	-	-	-
1a.4.5	Disposal of DAW generated	-	-	10	2	-	26	-	8	46	46	-	-	-	616	-	-	-	12,311	22	-
1a.4.6	Plant energy budget	-	-	-	-	-	-	1,592	239	1,831	1,831	-	-	-	-	-	-	-	-	-	-
1a.4.7	NRC Fees	-	-	-	-	-	-	706	71	776	776	-	-	-	-	-	-	-	-	-	-
1a.4.8	Emergency Planning Fees	-	-	-	-	-	-	385	39	424	-	424	-	-	-	-	-	-	-	-	-
1a.4.9	FEMA Fees	-	-	-	-	-	-	193	29	222	222	-	-	-	-	-	-	-	-	-	-
1a.4.10	Spent Fuel Pool O&M	-	-	-	-	-	-	745	112	857	-	857	-	-	-	-	-	-	-	-	-
1a.4.11	Indirect Overhead	-	-	-	-	-	-	2,677	402	3,078	3,078	-	-	-	-	-	-	-	-	-	-
1a.4.12	Security Staff Cost	-	-	-	-	-	-	1,189	178	1,368	1,368	-	-	-	-	-	-	-	-	-	46,678
1a.4.13	Utility Staff Cost	-	-	-	-	-	-	23,876	3,581	27,458	27,458	-	-	-	-	-	-	-	-	-	433,829
1a.4	Subtotal Period 1a Period-Dependent Costs	-	912	10	2	-	26	33,811	5,085	39,845	38,564	1,281	-	-	616	-	-	-	12,311	22	480,507
1a.0	TOTAL PERIOD 1a COST	-	912	10	2	-	26	36,621	5,564	43,135	41,853	1,281	-	-	616	-	-	-	12,311	22	516,397

Table D-1
McGuire Nuclear Station - Unit 1
SAFSTOR Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 1b - SAFSTOR Limited DECON Activities																					
Period 1b Direct Decommissioning Activities																					
Decontamination of Site Buildings																					
1b.1.1.1	Reactor Building	858	-	-	-	-	-	-	429	1,287	1,287	-	-	-	-	-	-	-	-	20,732	-
1b.1.1.2	Auxiliary Building	238	-	-	-	-	-	-	119	357	357	-	-	-	-	-	-	-	-	6,301	-
1b.1.1.3	Fuel Building	606	-	-	-	-	-	-	303	910	910	-	-	-	-	-	-	-	-	13,339	-
1b.1.1	Totals	1,703	-	-	-	-	-	-	851	2,554	2,554	-	-	-	-	-	-	-	-	40,371	-
1b.1	Subtotal Period 1b Activity Costs	1,703	-	-	-	-	-	-	851	2,554	2,554	-	-	-	-	-	-	-	-	40,371	-
Period 1b Additional Costs																					
1b.2.1	Spent Fuel Pool Isolation	-	-	-	-	-	-	9,407	1,411	10,819	10,819	-	-	-	-	-	-	-	-	-	-
1b.2	Subtotal Period 1b Additional Costs	-	-	-	-	-	-	9,407	1,411	10,819	10,819	-	-	-	-	-	-	-	-	-	-
Period 1b Collateral Costs																					
1b.3.1	Decon equipment	878	-	-	-	-	-	-	132	1,010	1,010	-	-	-	-	-	-	-	-	-	-
1b.3.2	Process liquid waste	100	-	40	261	-	176	-	137	714	714	-	-	-	677	-	-	-	40,645	132	-
1b.3.3	Small tool allowance	-	31	-	-	-	-	-	5	36	36	-	-	-	-	-	-	-	-	-	-
1b.3	Subtotal Period 1b Collateral Costs	978	31	40	261	-	176	-	273	1,760	1,760	-	-	-	677	-	-	-	40,645	132	-
Period 1b Period-Dependent Costs																					
1b.4.1	Decon supplies	585	-	-	-	-	-	-	146	731	731	-	-	-	-	-	-	-	-	-	-
1b.4.2	Insurance	-	-	-	-	-	-	268	27	295	295	-	-	-	-	-	-	-	-	-	-
1b.4.3	Property taxes	-	-	-	-	-	-	348	35	383	383	-	-	-	-	-	-	-	-	-	-
1b.4.4	Health physics supplies	-	282	-	-	-	-	-	71	353	353	-	-	-	-	-	-	-	-	-	-
1b.4.5	Heavy equipment rental	-	116	-	-	-	-	-	17	133	133	-	-	-	-	-	-	-	-	-	-
1b.4.6	Disposal of DAW generated	-	-	7	1	-	18	-	5	32	32	-	-	-	431	-	-	-	8,610	16	-
1b.4.7	Plant energy budget	-	-	-	-	-	-	401	60	462	462	-	-	-	-	-	-	-	-	-	-
1b.4.8	NRC Fees	-	-	-	-	-	-	178	18	196	196	-	-	-	-	-	-	-	-	-	-
1b.4.9	Emergency Planning Fees	-	-	-	-	-	-	97	10	107	-	107	-	-	-	-	-	-	-	-	-
1b.4.10	FEMA Fees	-	-	-	-	-	-	49	7	56	56	-	-	-	-	-	-	-	-	-	-
1b.4.11	Spent Fuel Pool O&M	-	-	-	-	-	-	188	28	216	-	216	-	-	-	-	-	-	-	-	-
1b.4.12	Indirect Overhead	-	-	-	-	-	-	675	101	776	776	-	-	-	-	-	-	-	-	-	-
1b.4.13	Security Staff Cost	-	-	-	-	-	-	300	45	345	345	-	-	-	-	-	-	-	-	-	-
1b.4.14	Utility Staff Cost	-	-	-	-	-	-	6,018	903	6,921	6,921	-	-	-	-	-	-	-	-	-	109,349
1b.4	Subtotal Period 1b Period-Dependent Costs	585	398	7	1	-	18	8,522	1,473	11,005	10,682	323	-	-	431	-	-	-	8,610	16	121,114
1b.0	TOTAL PERIOD 1b COST	3,265	430	47	262	-	195	17,930	4,009	26,137	25,814	323	-	-	1,108	-	-	-	49,255	40,519	121,114
PERIOD 1c - Preparations for SAFSTOR Dormancy																					
Period 1c Direct Decommissioning Activities																					
1c.1.1	Prepare support equipment for storage	-	388	-	-	-	-	-	58	446	446	-	-	-	-	-	-	-	-	3,000	-
1c.1.2	Install containment pressure equal. lines	-	32	-	-	-	-	-	5	36	36	-	-	-	-	-	-	-	-	700	-
1c.1.3	Interim survey prior to dormancy	-	-	-	-	-	-	733	220	953	953	-	-	-	-	-	-	-	-	13,990	-
1c.1.4	Secure building accesses									[a]											
1c.1.5	Prepare & submit interim report	-	-	-	-	-	-	39	6	45	45	-	-	-	-	-	-	-	-	-	583
1c.1	Subtotal Period 1c Activity Costs	-	420	-	-	-	-	772	289	1,481	1,481	-	-	-	-	-	-	-	-	17,690	583
Period 1c Collateral Costs																					
1c.3.1	Process liquid waste	145	-	58	379	-	257	-	199	1,038	1,038	-	-	-	985	-	-	-	59,105	192	-
1c.3.2	Small tool allowance	-	3	-	-	-	-	-	0	4	4	-	-	-	-	-	-	-	-	-	-
1c.3	Subtotal Period 1c Collateral Costs	145	3	58	379	-	257	-	200	1,041	1,041	-	-	-	985	-	-	-	59,105	192	-

Table D-1
McGuire Nuclear Station - Unit 1
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Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt, Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 1c Period-Dependent Costs																					
1c.4.1	Insurance	-	-	-	-	-	-	268	27	295	295	-	-	-	-	-	-	-	-	-	-
1c.4.2	Property taxes	-	-	-	-	-	-	348	35	383	383	-	-	-	-	-	-	-	-	-	-
1c.4.3	Health physics supplies	-	188	-	-	-	-	-	47	235	235	-	-	-	-	-	-	-	-	-	-
1c.4.4	Heavy equipment rental	-	116	-	-	-	-	-	17	133	133	-	-	-	-	-	-	-	-	-	-
1c.4.5	Disposal of DAW generated	-	-	3	0	-	7	-	2	12	12	-	-	-	155	-	-	-	3,103	6	-
1c.4.6	Plant energy budget	-	-	-	-	-	-	401	60	462	462	-	-	-	-	-	-	-	-	-	-
1c.4.7	NRC Fees	-	-	-	-	-	-	178	18	196	196	-	-	-	-	-	-	-	-	-	-
1c.4.8	Emergency Planning Fees	-	-	-	-	-	-	97	10	107	-	107	-	-	-	-	-	-	-	-	-
1c.4.9	FEMA Fees	-	-	-	-	-	-	49	7	56	56	-	-	-	-	-	-	-	-	-	-
1c.4.10	Spent Fuel Pool O&M	-	-	-	-	-	-	188	28	216	-	216	-	-	-	-	-	-	-	-	-
1c.4.11	Indirect Overhead	-	-	-	-	-	-	675	101	776	776	-	-	-	-	-	-	-	-	-	-
1c.4.12	Security Staff Cost	-	-	-	-	-	-	300	45	345	345	-	-	-	-	-	-	-	-	-	11,765
1c.4.13	Utility Staff Cost	-	-	-	-	-	-	6,018	903	6,921	6,921	-	-	-	-	-	-	-	-	-	109,349
1c.4	Subtotal Period 1c Period-Dependent Costs	-	304	3	0	-	7	8,522	1,300	10,136	9,813	323	-	-	155	-	-	-	3,103	6	121,114
1c.0	TOTAL PERIOD 1c COST	145	727	61	379	-	263	9,294	1,788	12,658	12,335	323	-	-	1,140	-	-	-	62,208	17,887	121,697
PERIOD 1 TOTALS		3,410	2,069	119	643	-	483	63,845	11,361	81,930	80,003	1,927	-	-	2,864	-	-	-	123,774	58,429	759,208
PERIOD 2a - SAFSTOR Dormancy with Wet Spent Fuel Storage																					
Period 2a Direct Decommissioning Activities																					
2a.1.1	Quarterly Inspection									a											
2a.1.2	Semi-annual environmental survey									a											
2a.1.3	Prepare reports									a											
2a.1.4	Bituminous roof replacement	-	-	-	-	-	-	399	60	459	459	-	-	-	-	-	-	-	-	-	-
2a.1.5	Maintenance supplies	-	-	-	-	-	-	1,673	418	2,091	2,091	-	-	-	-	-	-	-	-	-	-
2a.1	Subtotal Period 2a Activity Costs	-	-	-	-	-	-	2,072	478	2,550	2,550	-	-	-	-	-	-	-	-	-	-
Period 2a Collateral Costs																					
2a.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	8,396	1,259	9,656	-	9,656	-	-	-	-	-	-	-	-	-
2a.3	Subtotal Period 2a Collateral Costs	-	-	-	-	-	-	8,396	1,259	9,656	-	9,656	-	-	-	-	-	-	-	-	-
Period 2a Period-Dependent Costs																					
2a.4.1	Insurance	-	-	-	-	-	-	6,365	637	7,002	6,197	804	-	-	-	-	-	-	-	-	-
2a.4.2	Property taxes	-	-	-	-	-	-	4,231	423	4,654	22	4,632	-	-	-	-	-	-	-	-	-
2a.4.3	Health physics supplies	-	1,385	-	-	-	-	-	346	1,731	1,731	-	-	-	-	-	-	-	-	-	-
2a.4.4	Disposal of DAW generated	-	-	93	15	-	231	-	69	408	408	-	-	-	5,490	-	-	-	109,802	200	-
2a.4.5	Plant energy budget	-	-	-	-	-	-	4,238	636	4,873	2,437	2,437	-	-	-	-	-	-	-	-	-
2a.4.6	NRC Fees	-	-	-	-	-	-	2,681	268	2,949	2,949	-	-	-	-	-	-	-	-	-	-
2a.4.7	Emergency Planning Fees	-	-	-	-	-	-	5,129	513	5,642	-	5,642	-	-	-	-	-	-	-	-	-
2a.4.8	Spent Fuel Pool O&M	-	-	-	-	-	-	9,920	1,488	11,407	-	11,407	-	-	-	-	-	-	-	-	-
2a.4.9	Indirect Overhead	-	-	-	-	-	-	6,764	1,015	7,779	1,723	6,056	-	-	-	-	-	-	-	-	-
2a.4.10	Security Staff Cost	-	-	-	-	-	-	24,399	3,660	28,059	10,404	17,655	-	-	-	-	-	-	-	-	811,813
2a.4.11	Utility Staff Cost	-	-	-	-	-	-	62,442	9,366	71,808	14,835	56,973	-	-	-	-	-	-	-	-	1,096,294
2a.4	Subtotal Period 2a Period-Dependent Costs	-	1,385	93	15	-	231	126,169	18,421	146,313	40,707	105,606	-	-	5,490	-	-	-	109,802	200	1,908,107
2a.0	TOTAL PERIOD 2a COST	-	1,385	93	15	-	231	136,637	20,158	158,519	43,257	115,262	-	-	5,490	-	-	-	109,802	200	1,908,107
PERIOD 2b - SAFSTOR Dormancy with Dry Spent Fuel Storage																					
Period 2b Direct Decommissioning Activities																					
2b.1.1	Quarterly Inspection									a											
2b.1.2	Semi-annual environmental survey									a											
2b.1.3	Prepare reports									a											
2b.1.4	Bituminous roof replacement	-	-	-	-	-	-	173	26	199	199	-	-	-	-	-	-	-	-	-	-

Table D-1
McGuire Nuclear Station - Unit 1
SAFSTOR Decommissioning Cost Estimate
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Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed WL, Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
2b.1.5	Maintenance supplies	-	-	-	-	-	-	724	181	904	904	-	-	-	-	-	-	-	-	-	-
2b.1	Subtotal Period 2b Activity Costs	-	-	-	-	-	-	896	207	1,103	1,103	-	-	-	-	-	-	-	-	-	-
Period 2b Collateral Costs																					
2b.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	822	123	945	-	945	-	-	-	-	-	-	-	-	-
2b.3	Subtotal Period 2b Collateral Costs	-	-	-	-	-	-	822	123	945	-	945	-	-	-	-	-	-	-	-	-
Period 2b Period-Dependent Costs																					
2b.4.1	Insurance	-	-	-	-	-	-	2,510	251	2,761	2,681	80	-	-	-	-	-	-	-	-	-
2b.4.2	Property taxes	-	-	-	-	-	-	9	1	10	10	-	-	-	-	-	-	-	-	-	-
2b.4.3	Health physics supplies	-	502	-	-	-	-	-	126	628	628	-	-	-	-	-	-	-	-	-	-
2b.4.4	Disposal of DAW generated	-	-	37	6	-	93	-	28	164	164	-	-	-	2,212	-	-	-	44,239	81	-
2b.4.5	Plant energy budget	-	-	-	-	-	-	917	137	1,054	1,054	-	-	-	-	-	-	-	-	-	-
2b.4.6	NRC Fees	-	-	-	-	-	-	1,160	116	1,276	1,276	-	-	-	-	-	-	-	-	-	-
2b.4.7	Emergency Planning Fees	-	-	-	-	-	-	288	29	316	-	316	-	-	-	-	-	-	-	-	-
2b.4.8	Indirect Overhead	-	-	-	-	-	-	1,185	178	1,363	745	618	-	-	-	-	-	-	-	-	-
2b.4.9	Security Staff Cost	-	-	-	-	-	-	5,745	862	6,607	4,500	2,107	-	-	-	-	-	-	-	-	162,077
2b.4.10	Utility Staff Cost	-	-	-	-	-	-	10,560	1,584	12,144	6,417	5,726	-	-	-	-	-	-	-	-	192,091
2b.4	Subtotal Period 2b Period-Dependent Costs	-	502	37	6	-	93	22,373	3,311	26,323	17,476	8,847	-	-	2,212	-	-	-	44,239	81	354,169
2b.0	TOTAL PERIOD 2b COST	-	502	37	6	-	93	24,091	3,641	28,371	18,579	9,793	-	-	2,212	-	-	-	44,239	81	354,169
PERIOD 2c - SAFSTOR Dormancy without Spent Fuel Storage																					
Period 2c Direct Decommissioning Activities																					
2c.1.1	Quarterly Inspection									a											
2c.1.2	Semi-annual environmental survey									a											
2c.1.3	Prepare reports									a											
2c.1.4	Bituminous roof replacement	-	-	-	-	-	-	999	150	1,149	1,149	-	-	-	-	-	-	-	-	-	-
2c.1.5	Maintenance supplies	-	-	-	-	-	-	4,187	1,047	5,234	5,234	-	-	-	-	-	-	-	-	-	-
2c.1	Subtotal Period 2c Activity Costs	-	-	-	-	-	-	5,186	1,197	6,383	6,383	-	-	-	-	-	-	-	-	-	-
Period 2c Period-Dependent Costs																					
2c.4.1	Insurance	-	-	-	-	-	-	14,104	1,410	15,515	15,515	-	-	-	-	-	-	-	-	-	-
2c.4.2	Property taxes	-	-	-	-	-	-	50	5	55	55	-	-	-	-	-	-	-	-	-	-
2c.4.3	Health physics supplies	-	2,735	-	-	-	-	-	684	3,419	3,419	-	-	-	-	-	-	-	-	-	-
2c.4.4	Disposal of DAW generated	-	-	211	34	-	527	-	158	930	930	-	-	-	12,510	-	-	-	250,202	456	-
2c.4.5	Plant energy budget	-	-	-	-	-	-	5,304	796	6,100	6,100	-	-	-	-	-	-	-	-	-	-
2c.4.6	NRC Fees	-	-	-	-	-	-	6,079	608	6,687	6,687	-	-	-	-	-	-	-	-	-	-
2c.4.7	Indirect Overhead	-	-	-	-	-	-	3,751	563	4,314	4,314	-	-	-	-	-	-	-	-	-	-
2c.4.8	Security Staff Cost	-	-	-	-	-	-	22,648	3,397	26,045	26,045	-	-	-	-	-	-	-	-	-	-
2c.4.9	Utility Staff Cost	-	-	-	-	-	-	32,294	4,844	37,138	37,138	-	-	-	-	-	-	-	-	-	521,100
2c.4	Subtotal Period 2c Period-Dependent Costs	-	2,735	211	34	-	527	84,230	12,465	100,202	100,202	-	-	-	12,510	-	-	-	250,202	456	607,950
2c.0	TOTAL PERIOD 2c COST	-	2,735	211	34	-	527	89,417	13,661	106,585	106,585	-	-	-	12,510	-	-	-	250,202	456	1,129,050
PERIOD 2 TOTALS		-	4,623	341	55	-	851	250,145	37,460	293,475	168,421	125,054	-	-	20,212	-	-	-	404,243	736	3,391,326
PERIOD 3a - Reactivate Site Following SAFSTOR Dormancy																					
Period 3a Direct Decommissioning Activities																					
3a.1.1	Prepare preliminary decommissioning cost	-	-	-	-	-	-	88	13	101	101	-	-	-	-	-	-	-	-	-	1,300
3a.1.2	Review plant dwgs & specs.	-	-	-	-	-	-	311	47	358	358	-	-	-	-	-	-	-	-	-	4,600
3a.1.3	Perform detailed rad survey									a											
3a.1.4	End product description	-	-	-	-	-	-	68	10	78	78	-	-	-	-	-	-	-	-	-	1,000
3a.1.5	Detailed by-product inventory	-	-	-	-	-	-	88	13	101	101	-	-	-	-	-	-	-	-	-	1,300
3a.1.6	Define major work sequence	-	-	-	-	-	-	507	76	583	583	-	-	-	-	-	-	-	-	-	7,500

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3a.1.7	Perform SER and EA	-	-	-	-	-	-	210	31	241	241	-	-	-	-	-	-	-	-	-	3,100
3a.1.8	Perform Site-Specific Cost Study	-	-	-	-	-	-	338	51	389	389	-	-	-	-	-	-	-	-	-	5,000
3a.1.9	Prepare/submit License Termination Plan	-	-	-	-	-	-	277	42	319	319	-	-	-	-	-	-	-	-	-	4,096
3a.1.10	Receive NRC approval of termination plan									a											
Activity Specifications																					
3a.1.11.1	Re-activate plant & temporary facilities	-	-	-	-	-	-	498	75	573	516	-	57	-	-	-	-	-	-	-	7,370
3a.1.11.2	Plant systems	-	-	-	-	-	-	282	42	324	292	-	32	-	-	-	-	-	-	-	4,167
3a.1.11.3	Reactor internals	-	-	-	-	-	-	480	72	552	552	-	-	-	-	-	-	-	-	-	7,100
3a.1.11.4	Reactor vessel	-	-	-	-	-	-	440	66	506	506	-	-	-	-	-	-	-	-	-	6,500
3a.1.11.5	Biological shield	-	-	-	-	-	-	34	5	39	39	-	-	-	-	-	-	-	-	-	500
3a.1.11.6	Steam generators	-	-	-	-	-	-	211	32	243	243	-	-	-	-	-	-	-	-	-	3,120
3a.1.11.7	Reinforced concrete	-	-	-	-	-	-	108	16	124	62	-	62	-	-	-	-	-	-	-	1,600
3a.1.11.8	Main Turbine	-	-	-	-	-	-	27	4	31	-	-	31	-	-	-	-	-	-	-	400
3a.1.11.9	Main Condensers	-	-	-	-	-	-	27	4	31	-	-	31	-	-	-	-	-	-	-	400
3a.1.11.10	Plant structures & buildings	-	-	-	-	-	-	211	32	243	121	-	121	-	-	-	-	-	-	-	3,120
3a.1.11.11	Waste management	-	-	-	-	-	-	311	47	358	358	-	-	-	-	-	-	-	-	-	4,600
3a.1.11.12	Facility & site closeout	-	-	-	-	-	-	61	9	70	35	-	35	-	-	-	-	-	-	-	900
3a.1.11	Total	-	-	-	-	-	-	2,690	404	3,094	2,723	-	370	-	-	-	-	-	-	-	39,777
Planning & Site Preparations																					
3a.1.12	Prepare dismantling sequence	-	-	-	-	-	-	162	24	187	187	-	-	-	-	-	-	-	-	-	2,400
3a.1.13	Plant prep. & temp. svces	-	-	-	-	-	-	2,419	363	2,782	2,782	-	-	-	-	-	-	-	-	-	-
3a.1.14	Design water clean-up system	-	-	-	-	-	-	95	14	109	109	-	-	-	-	-	-	-	-	-	1,400
3a.1.15	Rigging/Cont. Cntrl Envlps/tooling/etc.	-	-	-	-	-	-	2,048	307	2,355	2,355	-	-	-	-	-	-	-	-	-	-
3a.1.16	Procure casks/liners & containers	-	-	-	-	-	-	83	12	96	96	-	-	-	-	-	-	-	-	-	1,230
3a.1	Subtotal Period 3a Activity Costs	-	-	-	-	-	-	9,384	1,408	10,791	10,421	-	370	-	-	-	-	-	-	-	72,703
Period 3a Additional Costs																					
3a.2.1	Site Characterization	-	-	-	-	-	-	2,935	881	3,816	3,816	-	-	-	-	-	-	-	-	19,100	7,852
3a.2	Subtotal Period 3a Additional Costs	-	-	-	-	-	-	2,935	881	3,816	3,816	-	-	-	-	-	-	-	-	19,100	7,852
Period 3a Period-Dependent Costs																					
3a.4.1	Insurance	-	-	-	-	-	-	423	42	466	466	-	-	-	-	-	-	-	-	-	-
3a.4.2	Property taxes	-	-	-	-	-	-	2	0	2	2	-	-	-	-	-	-	-	-	-	-
3a.4.3	Health physics supplies	-	392	-	-	-	-	-	98	490	490	-	-	-	-	-	-	-	-	-	-
3a.4.4	Heavy equipment rental	-	460	-	-	-	-	-	69	529	529	-	-	-	-	-	-	-	-	-	-
3a.4.5	Disposal of DAW generated	-	-	9	1	-	22	-	6	38	38	-	-	-	514	-	-	-	10,287	19	-
3a.4.6	Plant energy budget	-	-	-	-	-	-	1,592	239	1,831	1,831	-	-	-	-	-	-	-	-	-	-
3a.4.7	NRC Fees	-	-	-	-	-	-	249	25	274	274	-	-	-	-	-	-	-	-	-	-
3a.4.8	Indirect Overhead	-	-	-	-	-	-	1,596	239	1,835	1,835	-	-	-	-	-	-	-	-	-	-
3a.4.9	Security Staff Cost	-	-	-	-	-	-	1,190	179	1,369	1,369	-	-	-	-	-	-	-	-	-	35,728
3a.4.10	Utility Staff Cost	-	-	-	-	-	-	14,419	2,163	16,582	16,582	-	-	-	-	-	-	-	-	-	258,629
3a.4	Subtotal Period 3a Period-Dependent Costs	-	852	9	1	-	22	19,471	3,061	23,416	23,416	-	-	-	514	-	-	-	10,287	19	294,357
3a.0	TOTAL PERIOD 3a COST	-	852	9	1	-	22	31,790	5,349	38,022	37,652	-	370	-	514	-	-	-	10,287	19,119	374,912
PERIOD 3b - Decommissioning Preparations																					
Period 3b Direct Decommissioning Activities																					
Detailed Work Procedures																					
3b.1.1.1	Plant systems	-	-	-	-	-	-	433	65	498	448	-	50	-	-	-	-	-	-	-	4,733
3b.1.1.2	Reactor internals	-	-	-	-	-	-	229	34	263	263	-	-	-	-	-	-	-	-	-	2,500
3b.1.1.3	Remaining buildings	-	-	-	-	-	-	124	19	142	36	-	107	-	-	-	-	-	-	-	1,350
3b.1.1.4	CRD cooling assembly	-	-	-	-	-	-	92	14	105	105	-	-	-	-	-	-	-	-	-	1,000

Table D-1
McGuire Nuclear Station - Unit 1
SAFSTOR Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Detailed Work Procedures (continued)																					
3b.1.1.5	CRD housings & ICI tubes	-	-	-	-	-	-	92	14	105	105	-	-	-	-	-	-	-	-	-	1,000
3b.1.1.6	Incore instrumentation	-	-	-	-	-	-	92	14	105	105	-	-	-	-	-	-	-	-	-	1,000
3b.1.1.7	Reactor vessel	-	-	-	-	-	-	332	50	382	382	-	-	-	-	-	-	-	-	-	3,630
3b.1.1.8	Facility closeout	-	-	-	-	-	-	110	16	126	63	-	63	-	-	-	-	-	-	-	1,200
3b.1.1.9	Missile shields	-	-	-	-	-	-	41	6	47	47	-	-	-	-	-	-	-	-	-	450
3b.1.1.10	Biological shield	-	-	-	-	-	-	110	16	126	126	-	-	-	-	-	-	-	-	-	1,200
3b.1.1.11	Steam generators	-	-	-	-	-	-	421	63	484	484	-	-	-	-	-	-	-	-	-	4,600
3b.1.1.12	Reinforced concrete	-	-	-	-	-	-	92	14	105	53	-	53	-	-	-	-	-	-	-	1,000
3b.1.1.13	Main Turbine	-	-	-	-	-	-	143	21	164	-	-	164	-	-	-	-	-	-	-	1,560
3b.1.1.14	Main Condensers	-	-	-	-	-	-	143	21	164	-	-	164	-	-	-	-	-	-	-	1,560
3b.1.1.15	Auxiliary building	-	-	-	-	-	-	250	37	287	259	-	29	-	-	-	-	-	-	-	2,730
3b.1.1.16	Reactor building	-	-	-	-	-	-	250	37	287	259	-	29	-	-	-	-	-	-	-	2,730
3b.1.1	Total	-	-	-	-	-	-	2,951	443	3,394	2,736	-	658	-	-	-	-	-	-	-	32,243
3b.1	Subtotal Period 3b Activity Costs	-	-	-	-	-	-	2,951	443	3,394	2,736	-	658	-	-	-	-	-	-	-	32,243
Period 3b Collateral Costs																					
3b.3.1	Decon equipment	878	-	-	-	-	-	-	132	1,010	1,010	-	-	-	-	-	-	-	-	-	-
3b.3.2	Pipe cutting equipment	-	957	-	-	-	-	-	143	1,100	1,100	-	-	-	-	-	-	-	-	-	-
3b.3	Subtotal Period 3b Collateral Costs	878	957	-	-	-	-	-	275	2,110	2,110	-	-	-	-	-	-	-	-	-	-
Period 3b Period-Dependent Costs																					
3b.4.1	Decon supplies	27	-	-	-	-	-	-	7	34	34	-	-	-	-	-	-	-	-	-	-
3b.4.2	Insurance	-	-	-	-	-	-	240	24	264	264	-	-	-	-	-	-	-	-	-	-
3b.4.3	Property taxes	-	-	-	-	-	-	1	0	1	1	-	-	-	-	-	-	-	-	-	-
3b.4.4	Health physics supplies	-	214	-	-	-	-	-	53	267	267	-	-	-	-	-	-	-	-	-	-
3b.4.5	Heavy equipment rental	-	231	-	-	-	-	-	35	265	265	-	-	-	-	-	-	-	-	-	-
3b.4.6	Disposal of DAW generated	-	-	5	1	-	12	-	4	21	21	-	-	-	287	-	-	-	5,737	10	-
3b.4.7	Plant energy budget	-	-	-	-	-	-	798	120	918	918	-	-	-	-	-	-	-	-	-	-
3b.4.8	NRC Fees	-	-	-	-	-	-	125	12	137	137	-	-	-	-	-	-	-	-	-	-
3b.4.9	Indirect Overhead	-	-	-	-	-	-	1,110	166	1,276	1,276	-	-	-	-	-	-	-	-	-	-
3b.4.10	Security Staff Cost	-	-	-	-	-	-	597	90	686	686	-	-	-	-	-	-	-	-	-	-
3b.4.11	Utility Staff Cost	-	-	-	-	-	-	10,247	1,537	11,784	11,784	-	-	-	-	-	-	-	-	-	17,913
3b.4	Subtotal Period 3b Period-Dependent Costs	27	444	5	1	-	12	13,118	2,048	15,654	15,654	-	-	-	287	-	-	-	5,737	10	197,776
3b.0	TOTAL PERIOD 3b COST	905	1,401	5	1	-	12	16,069	2,766	21,158	20,500	-	658	-	287	-	-	-	5,737	10	230,019
PERIOD 3 TOTALS		905	2,253	14	2	-	34	47,859	8,114	59,181	58,152	-	1,028	-	801	-	-	-	16,025	19,129	604,931
PERIOD 4a - Large Component Removal																					
Period 4a Direct Decommissioning Activities																					
Nuclear Steam Supply System Removal																					
4a.1.1.1	Reactor Coolant Piping	37	172	21	21	155	165	-	131	703	703	-	-	625	625	-	-	-	144,980	5,128	-
4a.1.1.2	Pressurizer Relief Tank	5	18	6	6	41	40	-	24	139	139	-	-	165	165	-	-	-	36,553	584	-
4a.1.1.3	Reactor Coolant Pumps & Motors	15	69	39	153	143	1,210	-	376	2,006	2,006	-	-	272	4,708	-	-	-	888,360	3,464	-
4a.1.1.4	Pressurizer	7	45	351	334	-	992	-	348	2,078	2,078	-	-	-	3,860	-	-	-	240,508	1,824	-
4a.1.1.5	Steam Generators	287	2,606	2,654	3,023	2,302	4,777	-	3,054	18,704	18,704	-	-	21,655	18,589	-	-	-	3,569,235	23,227	3,750
4a.1.1.6	CRDMs/ICIs/Service Structure Removal	23	65	196	53	33	114	-	89	572	572	-	-	401	2,898	-	-	-	66,939	2,016	-
4a.1.1.7	Reactor Vessel Internals	86	1,928	4,773	1,105	-	2,835	193	4,405	15,324	15,324	-	-	-	3,618	125	470	-	342,705	23,700	1,080
4a.1.1.8	Vessel & Internals GTCC Disposal	-	-	-	-	-	14,761	-	2,214	16,975	16,975	-	-	-	-	-	-	666	129,800	-	-
4a.1.1.9	Reactor Vessel	-	3,856	1,164	434	-	3,469	193	5,055	14,171	14,171	-	-	-	6,290	2,955	-	-	943,207	23,700	1,080
4a.1.1	Totals	460	8,759	9,204	5,129	2,675	28,363	386	15,696	70,672	70,672	-	-	23,118	40,753	3,080	470	666	6,362,288	83,642	5,910

Table D-1
McGuire Nuclear Station - Unit 1
SAFSTOR Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Removal of Major Equipment																					
4a.1.2	Main Turbine/Generator	-	320	315	23	882	478	-	367	2,385	2,385	-	-	4,633	2,580	-	-	-	625,275	7,961	-
4a.1.3	Main Condensers	-	992	163	81	733	419	-	491	2,880	2,880	-	-	7,274	2,145	-	-	-	519,770	25,357	-
Cascading Costs from Clean Building Demolition																					
4a.1.4.1	Reactor Building	-	477	-	-	-	-	-	72	548	548	-	-	-	-	-	-	-	-	7,048	-
4a.1.4.2	AB-Aux FW Pump/Pntrtn Rm/Swtchgr Rm	-	55	-	-	-	-	-	8	63	63	-	-	-	-	-	-	-	-	747	-
4a.1.4.3	Auxiliary Building	-	182	-	-	-	-	-	27	210	210	-	-	-	-	-	-	-	-	2,609	-
4a.1.4.4	Fuel Building	-	55	-	-	-	-	-	8	64	64	-	-	-	-	-	-	-	-	790	-
4a.1.4.5	Main Steam Doghouses	-	48	-	-	-	-	-	7	55	55	-	-	-	-	-	-	-	-	603	-
4a.1.4	Totals	-	817	-	-	-	-	-	123	940	940	-	-	-	-	-	-	-	-	11,798	-
Disposal of Plant Systems																					
4a.1.5.1	Auxiliary Feedwater	-	328	16	29	1,094	-	-	252	1,719	1,719	-	-	12,031	-	-	-	-	488,570	8,123	-
4a.1.5.2	Auxiliary Fuel Oil	-	3	-	-	-	-	-	0	3	-	-	3	-	-	-	-	-	-	83	-
4a.1.5.3	Auxiliary Steam	-	21	-	-	-	-	-	3	24	-	-	24	-	-	-	-	-	-	628	-
4a.1.5.4	Auxiliary Steam RCA	-	110	2	3	102	-	-	43	260	260	-	-	1,125	-	-	-	-	45,675	2,670	-
4a.1.5.5	Cond Circ Water Intake Screen Bkwash	-	5	-	-	-	-	-	1	6	-	-	6	-	-	-	-	-	-	140	-
4a.1.5.6	Condensate	-	373	-	-	-	-	-	56	429	-	-	429	-	-	-	-	-	-	11,171	-
4a.1.5.7	Condensate Storage	-	86	-	-	-	-	-	13	99	-	-	99	-	-	-	-	-	-	2,338	-
4a.1.5.8	Condenser Circulating Water	-	133	-	-	-	-	-	20	153	-	-	153	-	-	-	-	-	-	4,041	-
4a.1.5.9	Condenser Cleaning	-	18	-	-	-	-	-	3	20	-	-	20	-	-	-	-	-	-	552	-
4a.1.5.10	Condenser Steam Air Ejector	-	54	-	-	-	-	-	8	62	-	-	62	-	-	-	-	-	-	1,697	-
4a.1.5.11	Containment Spray	-	119	4	6	247	-	-	68	444	444	-	-	2,715	-	-	-	-	110,271	2,830	-
4a.1.5.12	Conventional Chemical Addition	-	10	-	-	-	-	-	1	11	-	-	11	-	-	-	-	-	-	302	-
4a.1.5.13	Conventional Chemical Addition RCA	-	19	0	0	15	-	-	7	42	42	-	-	167	-	-	-	-	6,783	405	-
4a.1.5.14	Conventional LP Service Water	-	59	-	-	-	-	-	9	68	-	-	68	-	-	-	-	-	-	1,822	-
4a.1.5.15	DG Engine Air Intake & Exhaust	-	2	-	-	-	-	-	0	3	-	-	3	-	-	-	-	-	-	68	-
4a.1.5.16	DG Engine Cooling Water	-	29	-	-	-	-	-	4	33	-	-	33	-	-	-	-	-	-	844	-
4a.1.5.17	DG Engine Crankcase Vacuum	-	2	-	-	-	-	-	0	2	-	-	2	-	-	-	-	-	-	55	-
4a.1.5.18	DG Engine Fuel Oil	-	45	-	-	-	-	-	7	52	-	-	52	-	-	-	-	-	-	1,322	-
4a.1.5.19	DG Engine Lube Oil	-	38	-	-	-	-	-	6	44	-	-	44	-	-	-	-	-	-	1,155	-
4a.1.5.20	DG Engine Starting Air	-	24	-	-	-	-	-	4	28	-	-	28	-	-	-	-	-	-	755	-
4a.1.5.21	DG Room Sump Pump	-	26	-	-	-	-	-	4	30	-	-	30	-	-	-	-	-	-	739	-
4a.1.5.22	FW Lube & Hydraulic Oil	-	21	-	-	-	-	-	3	24	-	-	24	-	-	-	-	-	-	644	-
4a.1.5.23	FW Pump Turbine Steam Seal	-	5	-	-	-	-	-	1	5	-	-	5	-	-	-	-	-	-	148	-
4a.1.5.24	Feedwater	-	214	-	-	-	-	-	32	246	-	-	246	-	-	-	-	-	-	6,048	-
4a.1.5.25	Feedwater Pump Condensate Seal	-	22	-	-	-	-	-	3	25	-	-	25	-	-	-	-	-	-	681	-
4a.1.5.26	Feedwater RCA	-	88	4	6	244	-	-	60	402	402	-	-	2,686	-	-	-	-	109,061	2,169	-
4a.1.5.27	Generator Hydrogen	-	15	-	-	-	-	-	2	17	-	-	17	-	-	-	-	-	-	459	-
4a.1.5.28	Generator Seal Oil	-	8	-	-	-	-	-	1	9	-	-	9	-	-	-	-	-	-	254	-
4a.1.5.29	Generator Stator Cooling Water	-	20	-	-	-	-	-	3	23	-	-	23	-	-	-	-	-	-	608	-
4a.1.5.30	Heater Bleed Steam	-	70	-	-	-	-	-	10	80	-	-	80	-	-	-	-	-	-	2,187	-
4a.1.5.31	Heater Drains	-	197	-	-	-	-	-	29	226	-	-	226	-	-	-	-	-	-	5,982	-
4a.1.5.32	Heater Relief Valve	-	16	-	-	-	-	-	2	19	-	-	19	-	-	-	-	-	-	487	-
4a.1.5.33	Heater Vent	-	32	-	-	-	-	-	5	37	-	-	37	-	-	-	-	-	-	1,059	-
4a.1.5.34	MS Reheater Bleed Steam	-	29	-	-	-	-	-	4	34	-	-	34	-	-	-	-	-	-	930	-
4a.1.5.35	MS Steam Vent to Atmosphere	-	129	3	6	224	-	-	67	430	430	-	-	2,467	-	-	-	-	100,173	3,196	-
4a.1.5.36	Main Steam	-	18	-	-	-	-	-	3	21	-	-	21	-	-	-	-	-	-	569	-
4a.1.5.37	Main Steam Bypass to Condenser	-	33	-	-	-	-	-	5	38	-	-	38	-	-	-	-	-	-	1,001	-
4a.1.5.38	Main Steam RCA	-	31	1	2	59	-	-	17	109	109	-	-	647	-	-	-	-	26,288	729	-
4a.1.5.39	Main Turbine LO & Purification	-	77	-	-	-	-	-	12	88	-	-	88	-	-	-	-	-	-	2,277	-
4a.1.5.40	Main Turbine Leakoff & Steam Seal	-	29	-	-	-	-	-	4	33	-	-	33	-	-	-	-	-	-	836	-
4a.1.5.41	Miscellaneous Equipment	-	3	-	-	-	-	-	0	3	-	-	3	-	-	-	-	-	-	73	-
4a.1.5.42	Moisture Separator Reheater Drain	-	177	-	-	-	-	-	27	203	-	-	203	-	-	-	-	-	-	5,314	-
4a.1.5.43	SG Blowdown Recycle	-	277	4	7	263	-	-	110	661	661	-	-	2,893	-	-	-	-	117,485	6,845	-
4a.1.5.44	SG Wet Layup Recirculation	-	19	0	0	16	-	-	7	43	43	-	-	179	-	-	-	-	7,272	412	-

Table D-1
McGuire Nuclear Station - Unit 1
SAFSTOR Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes: Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Disposal of Plant Systems (continued)									2	15	-	-	15	-	-	-	-	-	-	391	-
4a.1.5.45	SM Supply to Aux Equipment	-	13	-	-	-	-	-	2	10	10	-	-	50	-	-	-	-	2,049	82	-
4a.1.5.46	SM Supply to Aux Equipment RCA	-	3	0	0	5	-	-	1	7	-	-	7	-	-	-	-	-	-	189	-
4a.1.5.47	Steam Supply to FW Pump Turbine	-	6	-	-	-	-	-	14	109	-	-	109	-	-	-	-	-	-	2,632	-
4a.1.5.48	Turbine Crossover	-	95	-	-	-	-	-	0	1	-	-	1	-	-	-	-	-	-	26	-
4a.1.5.49	Turbine Exhaust	-	1	-	-	-	-	-	10	78	-	-	78	-	-	-	-	-	-	2,016	-
4a.1.5.50	Turbine Hydraulic Oil	-	68	-	-	-	-	-	948	6,529	4,121	-	2,408	24,960	-	-	-	-	1,013,626	89,985	-
4a.1.5	Totals	-	3,218	33	59	2,271	-	-	77	407	407	-	-	397	25	-	-	-	20,091	8,369	-
4a.1.6	Scaffolding in support of decommissioning	-	276	7	2	40	5	-	17,701	83,814	81,406	-	2,408	60,382	45,503	3,080	470	666	8,541,050	227,112	5,910
4a.1	Subtotal Period 4a Activity Costs	460	14,383	9,723	5,294	6,601	29,265	386	27	145	145	-	-	-	142	-	-	-	8,503	28	-
Period 4a Collateral Costs									25	194	175	-	19	-	-	-	-	-	-	-	-
4a.3.1	Process liquid waste	18	-	8	55	-	37	-	11	85	85	-	-	-	-	-	-	-	-	-	-
4a.3.2	Small tool allowance	-	169	-	-	-	-	74	64	424	405	-	19	-	142	-	-	-	8,503	28	-
4a.3.3	Survey and Release of Scrap Metal	-	-	-	-	-	-	-													
4a.3	Subtotal Period 4a Collateral Costs	18	169	8	55	-	37	74													
Period 4a Period-Dependent Costs									18	89	89	-	-	-	-	-	-	-	-	-	-
4a.4.1	Decon supplies	71	-	-	-	-	-	-	63	696	696	-	-	-	-	-	-	-	-	-	-
4a.4.2	Insurance	-	-	-	-	-	-	633	0	2	2	-	0	-	-	-	-	-	-	-	-
4a.4.3	Property taxes	-	-	-	-	-	-	2	380	1,898	1,898	-	-	-	-	-	-	-	-	-	-
4a.4.4	Health physics supplies	-	1,519	-	-	-	-	-	439	3,365	3,365	-	-	-	-	-	-	-	-	-	-
4a.4.5	Heavy equipment rental	-	2,926	-	-	-	-	-	40	238	238	-	-	-	3,200	-	-	-	64,003	117	-
4a.4.6	Disposal of DAW generated	-	-	54	9	-	135	-	300	2,302	2,302	-	-	-	-	-	-	-	-	-	-
4a.4.7	Plant energy budget	-	-	-	-	-	-	2,002	87	958	958	-	-	-	-	-	-	-	-	-	-
4a.4.8	NRC Fees	-	-	-	-	-	-	871	74	571	571	-	-	-	-	-	-	-	-	-	-
4a.4.9	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	496	467	3,584	3,584	-	-	-	-	-	-	-	-	-	-
4a.4.10	Indirect Overhead	-	-	-	-	-	-	3,116	277	2,124	2,124	-	-	-	-	-	-	-	-	-	57,960
4a.4.11	Security Staff Cost	-	-	-	-	-	-	1,847	4,309	33,038	33,038	-	-	-	-	-	-	-	-	-	505,080
4a.4.12	Utility Staff Cost	-	-	-	-	-	-	28,728	6,456	48,865	48,865	-	-	-	-	-	-	-	-	-	563,040
4a.4	Subtotal Period 4a Period-Dependent Costs	71	4,445	54	9	-	135	37,696					0	-	3,200	-	-	-	64,003	117	-
4a.0	TOTAL PERIOD 4a COST	549	18,997	9,786	5,357	6,601	29,437	38,156	24,221	133,104	130,676	-	2,428	60,382	48,844	3,080	470	666	8,613,555	227,256	568,950
PERIOD 4b - Site Decontamination																					
Period 4b Direct Decommissioning Activities									324	1,420	1,420	-	-	-	2,732	-	-	-	245,101	1,066	-
4b.1.1	Remove spent fuel racks	311	36	137	79	-	534	-													
Disposal of Plant Systems									9	50	50	-	-	187	-	-	-	-	7,600	616	-
4b.1.2.1	Annulus Ventilation	-	24	0	0	17	-	-	163	992	992	-	-	4,609	-	-	-	-	187,158	8,974	-
4b.1.2.2	Aux & RB Heating Water	-	392	6	11	419	-	-	85	529	529	-	-	2,738	-	-	-	-	111,173	4,187	-
4b.1.2.3	Auxiliary Building Ventilation	-	185	4	7	249	-	-	234	1,417	1,417	-	-	6,042	685	-	-	-	302,319	11,279	-
4b.1.2.4	Boron Recycle	-	453	24	33	550	124	-	119	664	664	-	-	1,396	589	-	-	-	109,463	6,668	-
4b.1.2.5	Boron Thermal Regeneration	-	267	15	20	127	115	-	25	148	148	-	-	570	-	-	-	-	23,165	1,558	-
4b.1.2.6	CRD Ventilation	-	69	1	1	52	-	-	318	1,741	1,741	-	-	2,617	2,113	-	-	-	290,647	16,488	-
4b.1.2.7	Chemical Volume & Control	-	665	53	65	238	402	-	15	114	-	-	114	-	-	-	-	-	-	3,036	-
4b.1.2.8	Component Cooling	-	99	-	-	-	-	-	105	663	663	-	-	3,670	-	-	-	-	149,043	5,069	-
4b.1.2.9	Component Cooling RCA	-	211	5	9	334	-	-	11	62	62	-	-	226	-	-	-	-	9,187	762	-
4b.1.2.10	Cont Air Release & Addition	-	30	0	1	21	-	-	50	315	315	-	-	1,659	-	-	-	-	67,376	2,706	-
4b.1.2.11	Cont Air Return Ex & H2 Skimmer	-	108	2	4	151	-	-	10	66	66	-	-	441	-	-	-	-	17,913	347	-
4b.1.2.12	Cont Lower Compartment Vent	-	14	1	1	40	-	-	5	28	28	-	-	138	-	-	-	-	5,602	255	-
4b.1.2.13	Cont Upper Compartment Vent	-	11	0	0	13	-	-	73	498	498	-	-	3,543	-	-	-	-	143,897	2,363	-
4b.1.2.14	Containment Purge Ventilation	-	90	5	8	322	-	-	28	182	182	-	-	1,079	-	-	-	-	43,812	1,306	-
4b.1.2.15	Control Area Ventilation	-	52	1	3	98	-	-													

Table D-1
McGuire Nuclear Station - Unit 1
SAFSTOR Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Disposal of Plant Systems (continued)																					
4b.1.2.16	Conventional Sampling	-	225	16	15	45	93	-	90	483	483	-	-	495	476	-	-	-	62,680	5,622	-
4b.1.2.17	Diesel Building Ventilation	-	3	-	-	-	-	-	1	4	-	-	4	-	-	-	-	-	-	102	-
4b.1.2.18	Electrical (clean)	-	2,304	-	-	-	-	-	346	2,650	-	-	2,650	-	-	-	-	-	-	64,849	-
4b.1.2.19	Electrical (contaminated)	-	576	10	18	514	29	-	232	1,379	1,379	-	-	5,653	150	-	-	-	243,050	14,165	-
4b.1.2.20	Electrical (contaminated) RCA	-	4,047	72	128	4,874	-	-	1,769	10,890	10,890	-	-	53,582	-	-	-	-	2,175,984	97,394	-
4b.1.2.21	Equipment Decon	-	57	1	2	80	-	-	27	166	166	-	-	874	-	-	-	-	35,503	1,382	-
4b.1.2.22	FHB Ventilation	-	36	1	1	51	-	-	17	107	107	-	-	566	-	-	-	-	22,974	799	-
4b.1.2.23	Fire Protection	-	100	-	-	-	-	-	15	115	-	-	115	-	-	-	-	-	-	3,084	-
4b.1.2.24	Fire Protection RCA	-	430	9	16	596	-	-	200	1,251	1,251	-	-	6,550	-	-	-	-	265,995	10,640	-
4b.1.2.25	Groundwater Drainage	-	13	-	-	-	-	-	2	15	-	-	15	-	-	-	-	-	-	416	-
4b.1.2.26	Heating Boiler Fuel Gas	-	1	-	-	-	-	-	0	1	-	-	1	-	-	-	-	-	-	41	-
4b.1.2.27	ICI Room Ventilation	-	4	0	0	5	-	-	2	12	12	-	-	57	-	-	-	-	2,333	105	-
4b.1.2.28	Ice Condenser Refrigeration	-	965	22	40	1,513	-	-	476	3,017	3,017	-	-	16,633	-	-	-	-	675,464	23,422	-
4b.1.2.29	Incore Instrumentation Piping	-	29	1	1	-	5	-	9	45	45	-	-	-	26	-	-	-	2,337	812	-
4b.1.2.30	Instrument Air	-	220	-	-	-	-	-	33	253	-	-	253	-	-	-	-	-	-	7,020	-
4b.1.2.31	Instrument Air RCA	-	695	9	15	581	-	-	264	1,564	1,564	-	-	6,385	-	-	-	-	259,314	17,145	-
4b.1.2.32	Liquid Waste Recycle	-	553	45	55	321	317	-	278	1,569	1,569	-	-	3,528	1,768	-	-	-	288,612	13,594	-
4b.1.2.33	Miscellaneous Ventilation	-	21	-	-	-	-	-	3	24	-	-	24	-	-	-	-	-	-	631	-
4b.1.2.34	Nuclear Fuel Handling	-	47	6	9	103	45	-	40	251	251	-	-	1,136	230	-	-	-	66,763	1,142	-
4b.1.2.35	Nuclear Sampling	-	247	16	15	38	95	-	95	506	506	-	-	418	488	-	-	-	60,668	6,179	-
4b.1.2.36	Nuclear Service Water	-	52	-	-	-	-	-	8	60	-	-	60	-	-	-	-	-	-	1,578	-
4b.1.2.37	Nuclear Service Water RCA	-	347	10	18	683	-	-	193	1,251	1,251	-	-	7,508	-	-	-	-	304,917	8,375	-
4b.1.2.38	Reactor Coolant	-	220	36	59	319	346	-	202	1,182	1,182	-	-	3,503	1,769	-	-	-	300,916	5,658	-
4b.1.2.39	Refueling Water	-	298	7	13	513	-	-	154	986	986	-	-	5,639	-	-	-	-	228,990	7,461	-
4b.1.2.40	Residual Heat Removal	-	147	18	26	82	164	-	96	532	532	-	-	896	837	-	-	-	111,479	3,647	-
4b.1.2.41	Safety Injection	-	397	29	39	460	181	-	222	1,328	1,328	-	-	5,051	949	-	-	-	288,256	9,741	-
4b.1.2.42	Spent Fuel Cooling	-	211	14	22	156	120	-	111	634	634	-	-	1,713	614	-	-	-	124,580	5,286	-
4b.1.2.43	Turbine Building HVAC	-	120	-	-	-	-	-	18	138	-	-	138	-	-	-	-	-	-	3,949	-
4b.1.2.44	Unwatering Pump	-	14	-	-	-	-	-	2	16	-	-	16	-	-	-	-	-	-	437	-
4b.1.2	Totals	-	15,054	438	655	13,563	2,036	-	6,154	37,901	34,510	-	3,390	149,100	10,694	-	-	-	6,989,172	380,290	-
4b.1.3	Scaffolding in support of decommissioning	-	414	11	3	60	7	-	116	611	611	-	-	596	37	-	-	-	30,136	12,553	-
Decontamination of Site Buildings																					
4b.1.4.1	Reactor Building	850	604	143	219	754	777	-	930	4,277	4,277	-	-	8,285	8,105	-	-	-	899,321	33,670	-
4b.1.4.2	Auxiliary Building	224	139	38	59	73	81	-	190	805	805	-	-	806	2,215	-	-	-	184,719	8,416	-
4b.1.4.3	Fuel Building	535	597	14	20	276	31	-	470	1,943	1,943	-	-	3,035	539	-	-	-	160,564	26,656	-
4b.1.4	Totals	1,608	1,339	196	299	1,103	889	-	1,591	7,025	7,025	-	-	12,126	10,859	-	-	-	1,244,604	68,742	-
4b.1	Subtotal Period 4b Activity Costs	1,919	16,843	782	1,035	14,726	3,467	-	8,185	46,957	43,566	-	3,390	161,822	24,322	-	-	-	8,509,013	462,650	-
Period 4b Additional Costs																					
4b.2.1	License Termination Survey Program Management	-	-	-	-	-	-	616	185	801	801	-	-	-	-	-	-	-	-	-	6,240
4b.2	Subtotal Period 4b Additional Costs	-	-	-	-	-	-	616	185	801	801	-	-	-	-	-	-	-	-	-	6,240
Period 4b Collateral Costs																					
4b.3.1	Process liquid waste	62	-	29	191	-	129	-	95	507	507	-	-	-	496	-	-	-	29,787	97	-
4b.3.2	Small tool allowance	-	327	-	-	-	-	-	49	376	376	-	-	-	-	-	-	-	-	-	-
4b.3.3	Decommissioning Equipment Disposition	-	-	109	30	605	73	-	124	942	942	-	-	6,000	373	-	-	-	303,507	88	-
4b.3.4	Survey and Release of Scrap Metal	-	-	-	-	-	-	111	17	128	128	-	-	-	-	-	-	-	-	-	-
4b.3	Subtotal Period 4b Collateral Costs	62	327	139	221	605	202	111	285	1,952	1,952	-	-	6,000	870	-	-	-	333,294	185	-
Period 4b Period-Dependent Costs																					
4b.4.1	Decon supplies	644	-	-	-	-	-	-	161	805	805	-	-	-	-	-	-	-	-	-	-
4b.4.2	Insurance	-	-	-	-	-	-	649	65	714	714	-	-	-	-	-	-	-	-	-	-
4b.4.3	Property taxes	-	-	-	-	-	-	2	0	2	2	-	-	-	-	-	-	-	-	-	-

Table D-1
McGuire Nuclear Station - Unit 1
SAFSTOR Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 4b Period-Dependent Costs (continued)																					
4b.4.4	Health physics supplies	-	2,455	-	-	-	-	-	614	3,069	3,069	-	-	-	-	-	-	-	-	-	-
4b.4.5	Heavy equipment rental	-	2,978	-	-	-	-	-	447	3,424	3,424	-	-	-	-	-	-	-	-	-	-
4b.4.6	Disposal of DAW generated	-	-	102	16	-	253	-	76	447	447	-	-	-	6,019	-	-	-	120,388	219	-
4b.4.7	Plant energy budget	-	-	-	-	-	-	1,620	243	1,863	1,863	-	-	-	-	-	-	-	-	-	-
4b.4.8	NRC Fees	-	-	-	-	-	-	893	89	982	982	-	-	-	-	-	-	-	-	-	-
4b.4.9	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	509	76	585	585	-	-	-	-	-	-	-	-	-	-
4b.4.10	Indirect Overhead	-	-	-	-	-	-	2,164	325	2,489	2,489	-	-	-	-	-	-	-	-	-	-
4b.4.11	Security Staff Cost	-	-	-	-	-	-	1,893	284	2,177	2,177	-	-	-	-	-	-	-	-	-	59,400
4b.4.12	Utility Staff Cost	-	-	-	-	-	-	19,435	2,915	22,350	22,350	-	-	-	-	-	-	-	-	-	350,743
4b.4	Subtotal Period 4b Period-Dependent Costs	644	5,433	102	16	-	253	27,164	5,295	38,907	38,907	-	-	-	6,019	-	-	-	120,388	219	410,143
4b.0	TOTAL PERIOD 4b COST	2,625	22,603	1,023	1,272	15,331	3,923	27,891	13,949	88,617	85,227	-	3,390	167,822	31,212	-	-	-	8,962,695	463,055	416,383
PERIOD 4d - Delay before License Termination																					
Period 4d Period-Dependent Costs																					
4d.4.1	Insurance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4d.4.2	Property taxes	-	-	-	-	-	-	2	0	2	2	-	-	-	-	-	-	-	-	-	-
4d.4.3	Health physics supplies	-	99	-	-	-	-	-	25	124	124	-	-	-	-	-	-	-	-	-	-
4d.4.4	Disposal of DAW generated	-	-	2	0	-	5	-	2	9	9	-	-	-	122	-	-	-	2,447	4	-
4d.4.5	Plant energy budget	-	-	-	-	-	-	391	59	450	450	-	-	-	-	-	-	-	-	-	-
4d.4.6	NRC Fees	-	-	-	-	-	-	224	22	246	246	-	-	-	-	-	-	-	-	-	-
4d.4.7	Indirect Overhead	-	-	-	-	-	-	111	17	127	127	-	-	-	-	-	-	-	-	-	-
4d.4.8	Security Staff Cost	-	-	-	-	-	-	3	0	4	4	-	-	-	-	-	-	-	-	-	3,840
4d.4.9	Utility Staff Cost	-	-	-	-	-	-	872	131	1,003	1,003	-	-	-	-	-	-	-	-	-	17,920
4d.4	Subtotal Period 4d Period-Dependent Costs	-	99	2	0	-	5	1,603	255	1,965	1,965	-	-	-	122	-	-	-	2,447	4	21,760
4d.0	TOTAL PERIOD 4d COST	-	99	2	0	-	5	1,603	255	1,965	1,965	-	-	-	122	-	-	-	2,447	4	21,760
PERIOD 4e - License Termination																					
Period 4e Direct Decommissioning Activities																					
4e.1.1	ORISE confirmatory survey	-	-	-	-	-	-	150	45	195	195	-	-	-	-	-	-	-	-	-	-
4e.1.2	Terminate license									a											
4e.1	Subtotal Period 4e Activity Costs	-	-	-	-	-	-	150	45	195	195	-	-	-	-	-	-	-	-	-	-
Period 4e Additional Costs																					
4e.2.1	License Termination Survey	-	-	-	-	-	-	7,944	2,383	10,328	10,328	-	-	-	-	-	-	-	-	189,524	3,120
4e.2	Subtotal Period 4e Additional Costs	-	-	-	-	-	-	7,944	2,383	10,328	10,328	-	-	-	-	-	-	-	-	189,524	3,120
Period 4e Period-Dependent Costs																					
4e.4.1	Insurance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4e.4.2	Property taxes	-	-	-	-	-	-	1	0	1	1	-	-	-	-	-	-	-	-	-	-
4e.4.3	Health physics supplies	-	1,040	-	-	-	-	-	260	1,300	1,300	-	-	-	-	-	-	-	-	-	-
4e.4.4	Disposal of DAW generated	-	-	5	1	-	13	-	4	23	23	-	-	-	315	-	-	-	6,299	11	-
4e.4.5	Plant energy budget	-	-	-	-	-	-	240	36	276	276	-	-	-	-	-	-	-	-	-	-
4e.4.6	NRC Fees	-	-	-	-	-	-	532	53	585	585	-	-	-	-	-	-	-	-	-	-
4e.4.7	Indirect Overhead	-	-	-	-	-	-	427	64	491	491	-	-	-	-	-	-	-	-	-	-
4e.4.8	Security Staff Cost	-	-	-	-	-	-	417	62	479	479	-	-	-	-	-	-	-	-	-	11,786
4e.4.9	Utility Staff Cost	-	-	-	-	-	-	4,060	609	4,669	4,669	-	-	-	-	-	-	-	-	-	69,143
4e.4	Subtotal Period 4e Period-Dependent Costs	-	1,040	5	1	-	13	5,676	1,089	7,824	7,824	-	-	-	315	-	-	-	6,299	11	80,929
4e.0	TOTAL PERIOD 4e COST	-	1,040	5	1	-	13	13,770	3,517	18,347	18,347	-	-	-	315	-	-	-	6,299	189,536	84,049
PERIOD 4 TOTALS		3,174	42,739	10,816	6,630	21,932	33,378	81,420	41,943	242,032	236,214	-	5,818	228,204	80,493	3,080	470	666	17,585,000	879,850	1,091,141

Table D-1
McGuire Nuclear Station - Unit 1
SAFSTOR Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 5b - Site Restoration																					
Period 5b Direct Decommissioning Activities																					
Demolition of Remaining Site Buildings																					
5b.1.1.1	Reactor Building	-	2,706	-	-	-	-	-	406	3,112	-	-	3,112	-	-	-	-	-	-	40,056	-
5b.1.1.2	AB-Aux FW Pump/Pntrtn Rm/Swtchgr Rm	-	494	-	-	-	-	-	74	568	-	-	568	-	-	-	-	-	-	6,726	-
5b.1.1.3	Auxiliary Building	-	1,642	-	-	-	-	-	246	1,888	-	-	1,888	-	-	-	-	-	-	23,480	-
5b.1.1.4	Diesel Generator Building	-	135	-	-	-	-	-	20	155	-	-	155	-	-	-	-	-	-	1,794	-
5b.1.1.5	Fuel Building	-	544	-	-	-	-	-	82	626	-	-	626	-	-	-	-	-	-	8,332	-
5b.1.1.6	Intake & Discharge Structure & Piping	-	1,111	-	-	-	-	-	167	1,278	-	-	1,278	-	-	-	-	-	-	16,112	-
5b.1.1.7	Main Steam Doghouses	-	430	-	-	-	-	-	64	494	-	-	494	-	-	-	-	-	-	5,450	-
5b.1.1.8	Turbine Building	-	2,891	-	-	-	-	-	434	3,324	-	-	3,324	-	-	-	-	-	-	51,809	-
5b.1.1.9	Turbine Pedestal	-	670	-	-	-	-	-	101	771	-	-	771	-	-	-	-	-	-	8,172	-
5b.1.1	Totals	-	10,622	-	-	-	-	-	1,593	12,215	-	-	12,215	-	-	-	-	-	-	161,931	-
Site Closeout Activities																					
5b.1.2	Grade & landscape site	-	182	-	-	-	-	-	27	210	-	-	210	-	-	-	-	-	-	404	-
5b.1.3	Final report to NRC	-	-	-	-	-	-	143	21	164	164	-	-	-	-	-	-	-	-	-	1,560
5b.1	Subtotal Period 5b Activity Costs	-	10,804	-	-	-	-	143	1,642	12,589	164	-	12,425	-	-	-	-	-	-	162,335	1,560
Period 5b Additional Costs																					
5b.2.1	Concrete Crushing	-	393	-	-	-	-	3	59	455	-	-	455	-	-	-	-	-	-	1,991	-
5b.2	Subtotal Period 5b Additional Costs	-	393	-	-	-	-	3	59	455	-	-	455	-	-	-	-	-	-	1,991	-
Period 5b Collateral Costs																					
5b.3.1	Small tool allowance	-	117	-	-	-	-	-	17	134	-	-	134	-	-	-	-	-	-	-	-
5b.3	Subtotal Period 5b Collateral Costs	-	117	-	-	-	-	-	17	134	-	-	134	-	-	-	-	-	-	-	-
Period 5b Period-Dependent Costs																					
5b.4.1	Insurance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5b.4.2	Property taxes	-	-	-	-	-	-	3	0	3	-	-	3	-	-	-	-	-	-	-	-
5b.4.3	Heavy equipment rental	-	4,933	-	-	-	-	-	740	5,673	-	-	5,673	-	-	-	-	-	-	-	-
5b.4.4	Plant energy budget	-	-	-	-	-	-	267	40	307	-	-	307	-	-	-	-	-	-	-	-
5b.4.5	Indirect Overhead	-	-	-	-	-	-	820	123	943	943	-	-	-	-	-	-	-	-	-	-
5b.4.6	Security Staff Cost	-	-	-	-	-	-	849	127	976	-	-	976	-	-	-	-	-	-	-	23,186
5b.4.7	Utility Staff Cost	-	-	-	-	-	-	7,889	1,183	9,072	-	-	9,072	-	-	-	-	-	-	-	132,891
5b.4	Subtotal Period 5b Period-Dependent Costs	-	4,933	-	-	-	-	9,827	2,214	16,975	943	-	16,032	-	-	-	-	-	-	-	156,078
5b.0	TOTAL PERIOD 5b COST	-	16,247	-	-	-	-	9,973	3,933	30,153	1,107	-	29,046	-	-	-	-	-	-	164,326	157,638
PERIOD 5 TOTALS		-	16,247	-	-	-	-	9,973	3,933	30,153	1,107	-	29,046	-	-	-	-	-	-	164,326	157,638
TOTAL COST TO DECOMMISSION		7,489	67,931	11,289	7,330	21,932	34,746	453,241	102,812	706,770	543,896	126,981	35,893	228,204	104,370	3,080	470	666	18,129,040	1,122,471	6,004,243

Table D-1
McGuire Nuclear Station - Unit 1
SAFSTOR Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			

TOTAL COST TO DECOMMISSION WITH 17.02% CONTINGENCY:	$706,770	thousands of 2008 dollars
TOTAL NRC LICENSE TERMINATION COST IS 76.96% OR:	$543,896	thousands of 2008 dollars
SPENT FUEL MANAGEMENT COST IS 17.97% OR:	$126,981	thousands of 2008 dollars
NON-NUCLEAR DEMOLITION COST IS 5.08% OR:	$35,893	thousands of 2008 dollars
TOTAL LOW-LEVEL RADIOACTIVE WASTE VOLUME BURIED (EXCLUDING GTCC):	107,919	cubic feet
TOTAL GREATER THAN CLASS C RADWASTE VOLUME GENERATED:	666	cubic feet
TOTAL SCRAP METAL REMOVED:	42,275	tons
TOTAL CRAFT LABOR REQUIREMENTS:	1,103,371	man-hours

End Notes.
n/a - indicates that this activity not charged as decommissioning expense.
a - indicates that this activity performed by decommissioning staff.
0 - indicates that this value is less than 0.5 but is non-zero.
a cell containing " - " indicates a zero value

Table D-2
McGuire Nuclear Station - Unit 2
SAFSTOR Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes: Class A Cu. Feet	Burial Volumes: Class B Cu. Feet	Burial Volumes: Class C Cu. Feet	Burial Volumes: GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 1a - Shutdown through Transition																					
Period 1a Direct Decommissioning Activities																					
1a.1.1	SAFSTOR site characterization survey	-	-	-	-	-	-	383	115	498	498	-	-	-	-	-	-	-	-	-	-
1a.1.2	Prepare preliminary decommissioning cost	-	-	-	-	-	-	38	6	43	43	-	-	-	-	-	-	-	-	-	559
1a.1.3	Notification of Cessation of Operations									a											
1a.1.4	Remove fuel & source material									n/a											
1a.1.5	Notification of Permanent Defueling									a											
1a.1.6	Deactivate plant systems & process waste									a											
1a.1.7	Prepare and submit PSDAR	-	-	-	-	-	-	58	9	67	67	-	-	-	-	-	-	-	-	-	860
1a.1.8	Review plant dwgs & specs.	-	-	-	-	-	-	38	6	43	43	-	-	-	-	-	-	-	-	-	559
1a.1.9	Perform detailed rad survey									a											
1a.1.10	Estimate by-product inventory	-	-	-	-	-	-	29	4	33	33	-	-	-	-	-	-	-	-	-	430
1a.1.11	End product description	-	-	-	-	-	-	29	4	33	33	-	-	-	-	-	-	-	-	-	430
1a.1.12	Detailed by-product inventory	-	-	-	-	-	-	44	7	50	50	-	-	-	-	-	-	-	-	-	645
1a.1.13	Define major work sequence	-	-	-	-	-	-	29	4	33	33	-	-	-	-	-	-	-	-	-	430
1a.1.14	Perform SER and EA	-	-	-	-	-	-	90	14	104	104	-	-	-	-	-	-	-	-	-	1,333
1a.1.15	Perform Site-Specific Cost Study	-	-	-	-	-	-	145	22	167	167	-	-	-	-	-	-	-	-	-	2,150
Activity Specifications																					
1a.1.16.1	Prepare plant and facilities for SAFSTOR	-	-	-	-	-	-	143	21	165	165	-	-	-	-	-	-	-	-	-	2,116
1a.1.16.2	Plant systems	-	-	-	-	-	-	121	18	139	139	-	-	-	-	-	-	-	-	-	1,792
1a.1.16.3	Plant structures and buildings	-	-	-	-	-	-	91	14	104	104	-	-	-	-	-	-	-	-	-	1,342
1a.1.16.4	Waste management	-	-	-	-	-	-	58	9	67	67	-	-	-	-	-	-	-	-	-	860
1a.1.16.5	Facility and site dormancy	-	-	-	-	-	-	58	9	67	67	-	-	-	-	-	-	-	-	-	860
1a.1.16	Total	-	-	-	-	-	-	471	71	542	542	-	-	-	-	-	-	-	-	-	6,969
Detailed Work Procedures																					
1a.1.17.1	Plant systems	-	-	-	-	-	-	34	5	40	40	-	-	-	-	-	-	-	-	-	509
1a.1.17.2	Facility closeout & dormancy	-	-	-	-	-	-	35	5	40	40	-	-	-	-	-	-	-	-	-	516
1a.1.17	Total	-	-	-	-	-	-	69	10	80	80	-	-	-	-	-	-	-	-	-	1,025
1a.1.18	Procure vacuum drying system	-	-	-	-	-	-	3	0	3	3	-	-	-	-	-	-	-	-	-	43
1a.1.19	Drain/de-energize non-cont. systems									a											
1a.1.20	Drain & dry NSSS									a											
1a.1.21	Drain/de-energize contaminated systems									a											
1a.1.22	Decon/secure contaminated systems									a											
1a.1	Subtotal Period 1a Activity Costs	-	-	-	-	-	-	1,427	272	1,698	1,698	-	-	-	-	-	-	-	-	-	15,433
Period 1a Additional Costs																					
1a.2.1	Landfill and Firing Range Closure	-	-	-	-	-	-	818	82	900	-	-	900	-	-	-	-	-	-	-	-
1a.2	Subtotal Period 1a Additional Costs	-	-	-	-	-	-	818	82	900	-	-	900	-	-	-	-	-	-	-	-
Period 1a Collateral Costs																					
1a.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	92	14	106	-	106	-	-	-	-	-	-	-	-	-
1a.3	Subtotal Period 1a Collateral Costs	-	-	-	-	-	-	92	14	106	-	106	-	-	-	-	-	-	-	-	-
Period 1a Period-Dependent Costs																					
1a.4.1	Insurance	-	-	-	-	-	-	1,064	106	1,171	1,171	-	-	-	-	-	-	-	-	-	-
1a.4.2	Property taxes	-	-	-	-	-	-	1,381	138	1,519	1,519	-	-	-	-	-	-	-	-	-	-
1a.4.3	Health physics supplies	-	426	-	-	-	-	-	106	532	532	-	-	-	-	-	-	-	-	-	-
1a.4.4	Heavy equipment rental	-	460	-	-	-	-	-	69	529	529	-	-	-	-	-	-	-	-	-	-
1a.4.5	Disposal of DAW generated	-	-	10	2	-	24	-	7	42	42	-	-	-	571	-	-	-	11,419	21	-
1a.4.6	Plant energy budget	-	-	-	-	-	-	1,592	239	1,831	1,831	-	-	-	-	-	-	-	-	-	-
1a.4.7	NRC Fees	-	-	-	-	-	-	471	47	518	518	-	-	-	-	-	-	-	-	-	-
1a.4.8	Emergency Planning Fees	-	-	-	-	-	-	385	39	424	-	424	-	-	-	-	-	-	-	-	-

Table D-2
McGuire Nuclear Station - Unit 2
SAFSTOR Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt, Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 1a Period-Dependent Costs (continued)																					
1a.4.9	FEMA Fees	-	-	-	-	-	-	193	29	222	222	-	-	-	-	-	-	-	-	-	-
1a.4.10	Spent Fuel Pool O&M	-	-	-	-	-	-	745	112	857	-	857	-	-	-	-	-	-	-	-	-
1a.4.11	ISFSI Operating Costs	-	-	-	-	-	-	109	16	125	-	125	-	-	-	-	-	-	-	-	-
1a.4.12	Indirect Overhead	-	-	-	-	-	-	2,201	330	2,531	2,531	-	-	-	-	-	-	-	-	-	-
1a.4.13	Security Staff Cost	-	-	-	-	-	-	2,878	432	3,310	3,310	-	-	-	-	-	-	-	-	-	102,075
1a.4.14	Utility Staff Cost	-	-	-	-	-	-	19,239	2,886	22,125	22,125	-	-	-	-	-	-	-	-	-	356,657
1a.4	Subtotal Period 1a Period-Dependent Costs	-	886	10	2	-	24	30,260	4,556	35,737	34,331	1,407	-	-	571	-	-	-	11,419	21	458,732
1a.0	TOTAL PERIOD 1a COST	-	886	10	2	-	24	32,597	4,924	38,442	36,029	1,512	900	-	571	-	-	-	11,419	21	474,165
PERIOD 1b - SAFSTOR Limited DECON Activities																					
Period 1b Direct Decommissioning Activities																					
Decontamination of Site Buildings																					
1b.1.1.1	Reactor Building	858	-	-	-	-	-	-	429	1,287	1,287	-	-	-	-	-	-	-	-	20,732	-
1b.1.1.2	AB - Cont.Material Handling Area(common)	126	-	-	-	-	-	-	63	190	190	-	-	-	-	-	-	-	-	3,291	-
1b.1.1.3	AB - Hot Mach Shop/Lab Area(common)	47	-	-	-	-	-	-	24	71	71	-	-	-	-	-	-	-	-	1,244	-
1b.1.1.4	Auxiliary Building	238	-	-	-	-	-	-	119	357	357	-	-	-	-	-	-	-	-	6,301	-
1b.1.1.5	Equipment Staging Building(common)	12	-	-	-	-	-	-	6	18	18	-	-	-	-	-	-	-	-	315	-
1b.1.1.6	Fuel Building	606	-	-	-	-	-	-	303	910	910	-	-	-	-	-	-	-	-	13,339	-
1b.1.1.7	Retired Steam Gen.Storage Facility(com)	58	-	-	-	-	-	-	29	87	87	-	-	-	-	-	-	-	-	1,500	-
1b.1.1.8	Waste Solidification Building(common)	2	-	-	-	-	-	-	1	3	3	-	-	-	-	-	-	-	-	48	-
1b.1.1	Totals	1,949	-	-	-	-	-	-	974	2,923	2,923	-	-	-	-	-	-	-	-	46,769	-
1b.1	Subtotal Period 1b Activity Costs	1,949	-	-	-	-	-	-	974	2,923	2,923	-	-	-	-	-	-	-	-	46,769	-
Period 1b Additional Costs																					
1b.2.1	Spent Fuel Pool Isolation	-	-	-	-	-	-	6,272	941	7,212	7,212	-	-	-	-	-	-	-	-	-	-
1b.2.2	Misc Waste	-	-	11	10	114	-	-	20	153	153	-	-	176	-	-	-	-	19,312	159	-
1b.2.3	Landfill Post Closure Maintenance	-	-	-	-	-	-	10	1	11	-	-	11	-	-	-	-	-	-	-	-
1b.2	Subtotal Period 1b Additional Costs	-	-	11	10	114	-	6,282	961	7,377	7,366	-	11	176	-	-	-	-	19,312	159	-
Period 1b Collateral Costs																					
1b.3.1	Decon equipment	878	-	-	-	-	-	-	132	1,010	1,010	-	-	-	-	-	-	-	-	-	-
1b.3.2	Process liquid waste	104	-	42	272	-	184	-	143	745	745	-	-	-	707	-	-	-	42,439	138	-
1b.3.3	Small tool allowance	-	36	-	-	-	-	-	5	41	41	-	-	-	-	-	-	-	-	-	-
1b.3.4	Spent Fuel Capital and Transfer	-	-	-	-	-	-	139	21	160	-	160	-	-	-	-	-	-	-	-	-
1b.3	Subtotal Period 1b Collateral Costs	982	36	42	272	-	184	139	301	1,956	1,796	160	-	-	707	-	-	-	42,439	138	-
Period 1b Period-Dependent Costs																					
1b.4.1	Decon supplies	741	-	-	-	-	-	-	185	927	927	-	-	-	-	-	-	-	-	-	-
1b.4.2	Insurance	-	-	-	-	-	-	268	27	295	295	-	-	-	-	-	-	-	-	-	-
1b.4.3	Property taxes	-	-	-	-	-	-	348	35	383	383	-	-	-	-	-	-	-	-	-	-
1b.4.4	Health physics supplies	-	303	-	-	-	-	-	76	379	379	-	-	-	-	-	-	-	-	-	-
1b.4.5	Heavy equipment rental	-	116	-	-	-	-	-	17	133	133	-	-	-	-	-	-	-	-	-	-
1b.4.6	Disposal of DAW generated	-	-	9	1	-	21	-	6	37	37	-	-	-	505	-	-	-	10,093	18	-
1b.4.7	Plant energy budget	-	-	-	-	-	-	401	60	462	462	-	-	-	-	-	-	-	-	-	-
1b.4.8	NRC Fees	-	-	-	-	-	-	119	12	131	131	-	-	-	-	-	-	-	-	-	-
1b.4.9	Emergency Planning Fees	-	-	-	-	-	-	97	10	107	-	107	-	-	-	-	-	-	-	-	-
1b.4.10	FEMA Fees	-	-	-	-	-	-	49	7	56	56	-	-	-	-	-	-	-	-	-	-
1b.4.11	Spent Fuel Pool O&M	-	-	-	-	-	-	188	28	216	-	216	-	-	-	-	-	-	-	-	-
1b.4.12	ISFSI Operating Costs	-	-	-	-	-	-	27	4	32	-	32	-	-	-	-	-	-	-	-	-
1b.4.13	Indirect Overhead	-	-	-	-	-	-	555	83	638	638	-	-	-	-	-	-	-	-	-	-
1b.4.14	Security Staff Cost	-	-	-	-	-	-	725	109	834	834	-	-	-	-	-	-	-	-	-	25,728
1b.4.15	Utility Staff Cost	-	-	-	-	-	-	4,849	727	5,577	5,577	-	-	-	-	-	-	-	-	-	89,897

Table D-2
McGuire Nuclear Station - Unit 2
SAFSTOR Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
1b.4	Subtotal Period 1b Period-Dependent Costs	741	419	9	1	-	21	7,627	1,387	10,206	9,851	355	-	-	505	-	-	-	10,093	18	115,626
1b.0	TOTAL PERIOD 1b COST	3,672	454	61	283	114	205	14,048	3,624	22,461	21,936	514	11	176	1,212	-	-	-	71,844	47,085	115,626
PERIOD 1c - Preparations for SAFSTOR Dormancy																					
Period 1c Direct Decommissioning Activities																					
1c.1.1	Prepare support equipment for storage	-	388	-	-	-	-	-	58	446	446	-	-	-	-	-	-	-	-	3,000	-
1c.1.2	Install containment pressure equal. lines	-	32	-	-	-	-	-	5	36	36	-	-	-	-	-	-	-	-	700	-
1c.1.3	Interim survey prior to dormancy	-	-	-	-	-	-	733	220	953	953	-	-	-	-	-	-	-	-	13,990	-
1c.1.4	Secure building accesses									a											
1c.1.5	Prepare & submit interim report	-	-	-	-	-	-	17	3	20	20	-	-	-	-	-	-	-	-	-	251
1c.1	Subtotal Period 1c Activity Costs	-	420	-	-	-	-	750	285	1,455	1,455	-	-	-	-	-	-	-	-	17,690	251
Period 1c Additional Costs																					
1c.2.1	Landfill Post Closure Maintenance	-	-	-	-	-	-	10	1	11	-	-	11	-	-	-	-	-	-	-	-
1c.2	Subtotal Period 1c Additional Costs	-	-	-	-	-	-	10	1	11	-	-	11	-	-	-	-	-	-	-	-
Period 1c Collateral Costs																					
1c.3.1	Process liquid waste	145	-	58	379	-	257	-	199	1,038	1,038	-	-	-	985	-	-	-	59,105	192	-
1c.3.2	Small tool allowance	-	3	-	-	-	-	-	0	4	4	-	-	-	-	-	-	-	-	-	-
1c.3.3	Spent Fuel Capital and Transfer	-	-	-	-	-	-	139	21	160	-	160	-	-	-	-	-	-	-	-	-
1c.3	Subtotal Period 1c Collateral Costs	145	3	58	379	-	257	139	220	1,201	1,041	160	-	-	985	-	-	-	59,105	192	-
Period 1c Period-Dependent Costs																					
1c.4.1	Insurance	-	-	-	-	-	-	268	27	295	295	-	-	-	-	-	-	-	-	-	-
1c.4.2	Property taxes	-	-	-	-	-	-	348	35	383	383	-	-	-	-	-	-	-	-	-	-
1c.4.3	Health physics supplies	-	182	-	-	-	-	-	45	227	227	-	-	-	-	-	-	-	-	-	-
1c.4.4	Heavy equipment rental	-	116	-	-	-	-	-	17	133	133	-	-	-	-	-	-	-	-	-	-
1c.4.5	Disposal of DAW generated	-	-	2	0	-	6	-	2	11	11	-	-	-	144	-	-	-	2,878	5	-
1c.4.6	Plant energy budget	-	-	-	-	-	-	401	60	462	462	-	-	-	-	-	-	-	-	-	-
1c.4.7	NRC Fees	-	-	-	-	-	-	119	12	131	131	-	-	-	-	-	-	-	-	-	-
1c.4.8	Emergency Planning Fees	-	-	-	-	-	-	97	10	107	-	107	-	-	-	-	-	-	-	-	-
1c.4.9	FEMA Fees	-	-	-	-	-	-	49	7	56	56	-	-	-	-	-	-	-	-	-	-
1c.4.10	Spent Fuel Pool O&M	-	-	-	-	-	-	188	28	216	-	216	-	-	-	-	-	-	-	-	-
1c.4.11	ISFSI Operating Costs	-	-	-	-	-	-	27	4	32	-	32	-	-	-	-	-	-	-	-	-
1c.4.12	Indirect Overhead	-	-	-	-	-	-	555	83	638	638	-	-	-	-	-	-	-	-	-	-
1c.4.13	Security Staff Cost	-	-	-	-	-	-	725	109	834	834	-	-	-	-	-	-	-	-	-	25,728
1c.4.14	Utility Staff Cost	-	-	-	-	-	-	4,849	727	5,577	5,577	-	-	-	-	-	-	-	-	-	89,897
1c.4	Subtotal Period 1c Period-Dependent Costs	-	298	2	0	-	6	7,627	1,167	9,101	8,746	355	-	-	144	-	-	-	2,878	5	115,626
1c.0	TOTAL PERIOD 1c COST	145	720	61	379	-	263	8,526	1,674	11,768	11,242	514	11	-	1,129	-	-	-	61,984	17,887	115,876
PERIOD 1 TOTALS		3,817	2,060	132	664	114	492	55,171	10,221	72,671	69,207	2,540	923	176	2,912	-	-	-	145,247	64,993	705,667
PERIOD 2a - SAFSTOR Dormancy with Wet Spent Fuel Storage																					
Period 2a Direct Decommissioning Activities																					
2a.1.1	Quarterly Inspection									a											
2a.1.2	Semi-annual environmental survey									a											
2a.1.3	Prepare reports									a											
2a.1.4	Bituminous roof replacement	-	-	-	-	-	-	754	113	867	867	-	-	-	-	-	-	-	-	-	-
2a.1.5	Maintenance supplies	-	-	-	-	-	-	1,456	364	1,820	1,820	-	-	-	-	-	-	-	-	-	-
2a.1	Subtotal Period 2a Activity Costs	-	-	-	-	-	-	2,210	477	2,687	2,687	-	-	-	-	-	-	-	-	-	-

Table D-2
McGuire Nuclear Station - Unit 2
SAFSTOR Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 2a Additional Costs																					
2a.2.1	Landfill Post Closure Maintenance	-	-	-	-	-	-	417	42	459	-	-	459	-	-	-	-	-	-	-	-
2a.2	Subtotal Period 2a Additional Costs	-	-	-	-	-	-	417	42	459	-	-	459	-	-	-	-	-	-	-	-
Period 2a Collateral Costs																					
2a.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	8,027	1,204	9,231	-	9,231	-	-	-	-	-	-	-	-	-
2a.3	Subtotal Period 2a Collateral Costs	-	-	-	-	-	-	8,027	1,204	9,231	-	9,231	-	-	-	-	-	-	-	-	-
Period 2a Period-Dependent Costs																					
2a.4.1	Insurance	-	-	-	-	-	-	5,541	554	6,095	5,395	700	-	-	-	-	-	-	-	-	-
2a.4.2	Property taxes	-	-	-	-	-	-	4,611	461	5,073	19	5,053	-	-	-	-	-	-	-	-	-
2a.4.3	Health physics supplies	-	1,032	-	-	-	-	-	258	1,290	1,290	-	-	-	-	-	-	-	-	-	-
2a.4.4	Disposal of DAW generated	-	-	76	12	-	189	-	57	333	333	-	-	-	4,486	-	-	-	89,722	163	-
2a.4.5	Plant energy budget	-	-	-	-	-	-	3,689	553	4,242	2,121	2,121	-	-	-	-	-	-	-	-	-
2a.4.6	NRC Fees	-	-	-	-	-	-	2,070	207	2,277	2,277	-	-	-	-	-	-	-	-	-	-
2a.4.7	Emergency Planning Fees	-	-	-	-	-	-	4,464	446	4,911	-	4,911	-	-	-	-	-	-	-	-	-
2a.4.8	Spent Fuel Pool O&M	-	-	-	-	-	-	8,635	1,295	9,930	-	9,930	-	-	-	-	-	-	-	-	-
2a.4.9	ISFSI Operating Costs	-	-	-	-	-	-	1,263	189	1,452	-	1,452	-	-	-	-	-	-	-	-	-
2a.4.10	Indirect Overhead	-	-	-	-	-	-	2,758	414	3,171	686	2,486	-	-	-	-	-	-	-	-	-
2a.4.11	Security Staff Cost	-	-	-	-	-	-	21,240	3,186	24,425	9,056	15,369	-	-	-	-	-	-	-	-	706,680
2a.4.12	Utility Staff Cost	-	-	-	-	-	-	24,121	3,618	27,739	5,232	22,507	-	-	-	-	-	-	-	-	446,960
2a.4	Subtotal Period 2a Period-Dependent Costs	-	1,032	76	12	-	189	78,392	11,239	90,939	26,409	64,530	-	-	4,486	-	-	-	89,722	163	1,153,640
2a.0	TOTAL PERIOD 2a COST	-	1,032	76	12	-	189	89,045	12,962	103,316	29,096	73,761	459	-	4,486	-	-	-	89,722	163	1,153,640
PERIOD 2b - SAFSTOR Dormancy with Dry Spent Fuel Storage																					
Period 2b Direct Decommissioning Activities																					
2b.1.1	Quarterly Inspection									a											
2b.1.2	Semi-annual environmental survey									a											
2b.1.3	Prepare reports									a											
2b.1.4	Bituminous roof replacement	-	-	-	-	-	-	375	56	431	431	-	-	-	-	-	-	-	-	-	-
2b.1.5	Maintenance supplies	-	-	-	-	-	-	724	181	904	904	-	-	-	-	-	-	-	-	-	-
2b.1	Subtotal Period 2b Activity Costs	-	-	-	-	-	-	1,098	237	1,335	1,335	-	-	-	-	-	-	-	-	-	-
Period 2b Additional Costs																					
2b.2.1	Landfill Maintenance Perpetuity	-	-	-	-	-	-	390	39	429	-	-	429	-	-	-	-	-	-	-	-
2b.2	Subtotal Period 2b Additional Costs	-	-	-	-	-	-	390	39	429	-	-	429	-	-	-	-	-	-	-	-
Period 2b Collateral Costs																					
2b.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	822	123	945	-	945	-	-	-	-	-	-	-	-	-
2b.3	Subtotal Period 2b Collateral Costs	-	-	-	-	-	-	822	123	945	-	945	-	-	-	-	-	-	-	-	-
Period 2b Period-Dependent Costs																					
2b.4.1	Insurance	-	-	-	-	-	-	2,510	251	2,761	2,681	80	-	-	-	-	-	-	-	-	-
2b.4.2	Property taxes	-	-	-	-	-	-	9	1	10	10	-	-	-	-	-	-	-	-	-	-
2b.4.3	Health physics supplies	-	453	-	-	-	-	-	113	566	566	-	-	-	-	-	-	-	-	-	-
2b.4.4	Disposal of DAW generated	-	-	36	6	-	90	-	27	158	158	-	-	-	2,129	-	-	-	42,575	78	-
2b.4.5	Plant energy budget	-	-	-	-	-	-	917	137	1,054	1,054	-	-	-	-	-	-	-	-	-	-
2b.4.6	NRC Fees	-	-	-	-	-	-	1,029	103	1,132	1,132	-	-	-	-	-	-	-	-	-	-
2b.4.7	Emergency Planning Fees	-	-	-	-	-	-	288	29	316	-	316	-	-	-	-	-	-	-	-	-
2b.4.8	ISFSI Operating Costs	-	-	-	-	-	-	627	94	722	-	722	-	-	-	-	-	-	-	-	-
2b.4.9	Indirect Overhead	-	-	-	-	-	-	296	44	341	341	-	-	-	-	-	-	-	-	-	-
2b.4.10	Security Staff Cost	-	-	-	-	-	-	5,745	862	6,607	4,500	2,107	-	-	-	-	-	-	-	-	162,077
2b.4.11	Utility Staff Cost	-	-	-	-	-	-	2,261	339	2,600	2,600	-	-	-	-	-	-	-	-	-	48,023
2b.4	Subtotal Period 2b Period-Dependent Costs	-	453	36	6	-	90	13,682	2,001	16,266	13,041	3,225	-	-	2,129	-	-	-	42,575	78	210,100

Table D-2
McGuire Nuclear Station - Unit 2
SAFSTOR Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes: Class A Cu. Feet	Burial Volumes: Class B Cu. Feet	Burial Volumes: Class C Cu. Feet	Burial Volumes: GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
2b.0	TOTAL PERIOD 2b COST	-	453	36	6	-	90	15,992	2,400	18,976	14,377	4,170	429	-	2,129	-	-	-	42,575	78	210,100
PERIOD 2c - SAFSTOR Dormancy without Spent Fuel Storage																					
Period 2c Direct Decommissioning Activities																					
2c.1.1	Quarterly Inspection									a											
2c.1.2	Semi-annual environmental survey									a											
2c.1.3	Prepare reports									a											
2c.1.4	Bituminous roof replacement	-	-	-	-	-	-	2,261	339	2,600	2,600	-	-	-	-	-	-	-	-	-	-
2c.1.5	Maintenance supplies	-	-	-	-	-	-	4,367	1,092	5,459	5,459	-	-	-	-	-	-	-	-	-	-
2c.1	Subtotal Period 2c Activity Costs	-	-	-	-	-	-	6,628	1,431	8,059	8,059	-	-	-	-	-	-	-	-	-	-
Period 2c Period-Dependent Costs																					
2c.4.1	Insurance	-	-	-	-	-	-	14,710	1,471	16,181	16,181	-	-	-	-	-	-	-	-	-	-
2c.4.2	Property taxes	-	-	-	-	-	-	52	5	58	58	-	-	-	-	-	-	-	-	-	-
2c.4.3	Health physics supplies	-	2,734	-	-	-	-	-	684	3,418	3,418	-	-	-	-	-	-	-	-	-	-
2c.4.4	Disposal of DAW generated	-	-	217	35	-	541	-	162	955	955	-	-	-	12,848	-	-	-	256,968	468	-
2c.4.5	Plant energy budget	-	-	-	-	-	-	5,532	830	6,362	6,362	-	-	-	-	-	-	-	-	-	-
2c.4.6	NRC Fees	-	-	-	-	-	-	5,926	593	6,519	6,519	-	-	-	-	-	-	-	-	-	-
2c.4.7	Indirect Overhead	-	-	-	-	-	-	1,788	268	2,057	2,057	-	-	-	-	-	-	-	-	-	-
2c.4.8	Security Staff Cost	-	-	-	-	-	-	23,620	3,543	27,163	27,163	-	-	-	-	-	-	-	-	-	543,471
2c.4.9	Utility Staff Cost	-	-	-	-	-	-	13,645	2,047	15,691	15,691	-	-	-	-	-	-	-	-	-	289,851
2c.4	Subtotal Period 2c Period-Dependent Costs	-	2,734	217	35	-	541	65,274	9,602	78,403	78,403	-	-	-	12,848	-	-	-	256,968	468	833,323
2c.0	TOTAL PERIOD 2c COST	-	2,734	217	35	-	541	71,902	11,033	86,462	86,462	-	-	-	12,848	-	-	-	256,968	468	833,323
PERIOD 2 TOTALS		-	4,219	329	53	-	819	176,939	26,395	208,754	129,935	77,931	888	-	19,463	-	-	-	389,265	709	2,197,063
PERIOD 3a - Reactivate Site Following SAFSTOR Dormancy																					
Period 3a Direct Decommissioning Activities																					
3a.1.1	Prepare preliminary decommissioning cost	-	-	-	-	-	-	38	6	43	43	-	-	-	-	-	-	-	-	-	559
3a.1.2	Review plant dwgs & specs.	-	-	-	-	-	-	134	20	154	154	-	-	-	-	-	-	-	-	-	1,978
3a.1.3	Perform detailed rad survey									a											
3a.1.4	End product description	-	-	-	-	-	-	29	4	33	33	-	-	-	-	-	-	-	-	-	430
3a.1.5	Detailed by-product inventory	-	-	-	-	-	-	38	6	43	43	-	-	-	-	-	-	-	-	-	559
3a.1.6	Define major work sequence	-	-	-	-	-	-	218	33	251	251	-	-	-	-	-	-	-	-	-	3,225
3a.1.7	Perform SER and EA	-	-	-	-	-	-	90	14	104	104	-	-	-	-	-	-	-	-	-	1,333
3a.1.8	Perform Site-Specific Cost Study	-	-	-	-	-	-	145	22	167	167	-	-	-	-	-	-	-	-	-	2,150
3a.1.9	Prepare/submit License Termination Plan	-	-	-	-	-	-	119	18	137	137	-	-	-	-	-	-	-	-	-	1,761
3a.1.10	Receive NRC approval of termination plan									a											
Activity Specifications																					
3a.1.11.1	Re-activate plant & temporary facilities	-	-	-	-	-	-	214	32	246	222	-	25	-	-	-	-	-	-	-	3,169
3a.1.11.2	Plant systems	-	-	-	-	-	-	121	18	139	125	-	14	-	-	-	-	-	-	-	1,792
3a.1.11.3	Reactor internals	-	-	-	-	-	-	206	31	237	237	-	-	-	-	-	-	-	-	-	3,053
3a.1.11.4	Reactor vessel	-	-	-	-	-	-	189	28	217	217	-	-	-	-	-	-	-	-	-	2,795
3a.1.11.5	Biological shield	-	-	-	-	-	-	15	2	17	17	-	-	-	-	-	-	-	-	-	215
3a.1.11.6	Steam generators	-	-	-	-	-	-	91	14	104	104	-	-	-	-	-	-	-	-	-	1,342
3a.1.11.7	Reinforced concrete	-	-	-	-	-	-	47	7	54	27	-	27	-	-	-	-	-	-	-	688
3a.1.11.8	Main Turbine	-	-	-	-	-	-	12	2	13	-	-	13	-	-	-	-	-	-	-	172
3a.1.11.9	Main Condensers	-	-	-	-	-	-	12	2	13	-	-	13	-	-	-	-	-	-	-	172
3a.1.11.10	Plant structures & buildings	-	-	-	-	-	-	91	14	104	52	-	52	-	-	-	-	-	-	-	1,342
3a.1.11.11	Waste management	-	-	-	-	-	-	134	20	154	154	-	-	-	-	-	-	-	-	-	1,978
3a.1.11.12	Facility & site closeout	-	-	-	-	-	-	26	4	30	15	-	15	-	-	-	-	-	-	-	387
3a.1.11	Total	-	-	-	-	-	-	1,157	174	1,330	1,171	-	159	-	-	-	-	-	-	-	17,104

Table D-2
McGuire Nuclear Station - Unit 2
SAFSTOR Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes: Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Planning & Site Preparations																					
3a.1.12	Prepare dismantling sequence	-	-	-	-	-	-	70	10	80	80	-	-	-	-	-	-	-	-	-	1,032
3a.1.13	Plant prep. & temp. svces	-	-	-	-	-	-	2,419	363	2,782	2,782	-	-	-	-	-	-	-	-	-	-
3a.1.14	Design water clean-up system	-	-	-	-	-	-	41	6	47	47	-	-	-	-	-	-	-	-	-	602
3a.1.15	Rigging/Cont. Cntrl Envlps/tooling/etc.	-	-	-	-	-	-	2,048	307	2,355	2,355	-	-	-	-	-	-	-	-	-	-
3a.1.16	Procure casks/liners & containers	-	-	-	-	-	-	36	5	41	41	-	-	-	-	-	-	-	-	-	529
3a.1	Subtotal Period 3a Activity Costs	-	-	-	-	-	-	6,581	987	7,568	7,409	-	159	-	-	-	-	-	-	-	31,262
Period 3a Additional Costs																					
3a.2.1	Site Characterization	-	-	-	-	-	-	1,255	377	1,632	1,632	-	-	-	-	-	-	-	-	8,167	3,357
3a.2	Subtotal Period 3a Additional Costs	-	-	-	-	-	-	1,255	377	1,632	1,632	-	-	-	-	-	-	-	-	8,167	3,357
Period 3a Period-Dependent Costs																					
3a.4.1	Insurance	-	-	-	-	-	-	423	42	466	466	-	-	-	-	-	-	-	-	-	-
3a.4.2	Property taxes	-	-	-	-	-	-	2	0	2	2	-	-	-	-	-	-	-	-	-	-
3a.4.3	Health physics supplies	-	372	-	-	-	-	-	93	465	465	-	-	-	-	-	-	-	-	-	-
3a.4.4	Heavy equipment rental	-	460	-	-	-	-	-	69	529	529	-	-	-	-	-	-	-	-	-	-
3a.4.5	Disposal of DAW generated	-	-	8	1	-	20	-	6	36	36	-	-	-	481	-	-	-	9,613	18	-
3a.4.6	Plant energy budget	-	-	-	-	-	-	1,592	239	1,831	1,831	-	-	-	-	-	-	-	-	-	-
3a.4.7	NRC Fees	-	-	-	-	-	-	214	21	236	236	-	-	-	-	-	-	-	-	-	-
3a.4.8	Indirect Overhead	-	-	-	-	-	-	1,235	185	1,421	1,421	-	-	-	-	-	-	-	-	-	-
3a.4.9	Security Staff Cost	-	-	-	-	-	-	1,190	179	1,369	1,369	-	-	-	-	-	-	-	-	-	35,728
3a.4.10	Utility Staff Cost	-	-	-	-	-	-	10,709	1,606	12,315	12,315	-	-	-	-	-	-	-	-	-	200,229
3a.4	Subtotal Period 3a Period-Dependent Costs	-	832	8	1	-	20	15,366	2,441	18,669	18,669	-	-	-	481	-	-	-	9,613	18	235,957
3a.0	TOTAL PERIOD 3a COST	-	832	8	1	-	20	23,202	3,805	27,869	27,709	-	159	-	481	-	-	-	9,613	8,185	270,576
PERIOD 3b - Decommissioning Preparations																					
Period 3b Direct Decommissioning Activities																					
Detailed Work Procedures																					
3b.1.1.1	Plant systems	-	-	-	-	-	-	186	28	214	193	-	21	-	-	-	-	-	-	-	2,035
3b.1.1.2	Reactor internals	-	-	-	-	-	-	98	15	113	113	-	-	-	-	-	-	-	-	-	1,075
3b.1.1.3	Remaining buildings	-	-	-	-	-	-	53	8	61	15	-	46	-	-	-	-	-	-	-	581
3b.1.1.4	CRD cooling assembly	-	-	-	-	-	-	39	6	45	45	-	-	-	-	-	-	-	-	-	430
3b.1.1.5	CRD housings & ICI tubes	-	-	-	-	-	-	39	6	45	45	-	-	-	-	-	-	-	-	-	430
3b.1.1.6	Incore instrumentation	-	-	-	-	-	-	39	6	45	45	-	-	-	-	-	-	-	-	-	430
3b.1.1.7	Reactor vessel	-	-	-	-	-	-	143	21	164	164	-	-	-	-	-	-	-	-	-	1,561
3b.1.1.8	Facility closeout	-	-	-	-	-	-	47	7	54	27	-	27	-	-	-	-	-	-	-	516
3b.1.1.9	Missile shields	-	-	-	-	-	-	18	3	20	20	-	-	-	-	-	-	-	-	-	194
3b.1.1.10	Biological shield	-	-	-	-	-	-	47	7	54	54	-	-	-	-	-	-	-	-	-	516
3b.1.1.11	Steam generators	-	-	-	-	-	-	181	27	208	208	-	-	-	-	-	-	-	-	-	1,978
3b.1.1.12	Reinforced concrete	-	-	-	-	-	-	39	6	45	23	-	23	-	-	-	-	-	-	-	430
3b.1.1.13	Main Turbine	-	-	-	-	-	-	61	9	71	-	-	71	-	-	-	-	-	-	-	671
3b.1.1.14	Main Condensers	-	-	-	-	-	-	61	9	71	-	-	71	-	-	-	-	-	-	-	671
3b.1.1.15	Auxiliary building	-	-	-	-	-	-	107	16	124	111	-	12	-	-	-	-	-	-	-	1,174
3b.1.1.16	Reactor building	-	-	-	-	-	-	107	16	124	111	-	12	-	-	-	-	-	-	-	1,174
3b.1.1	Total	-	-	-	-	-	-	1,269	190	1,459	1,176	-	283	-	-	-	-	-	-	-	13,864
3b.1	Subtotal Period 3b Activity Costs	-	-	-	-	-	-	1,269	190	1,459	1,176	-	283	-	-	-	-	-	-	-	13,864
Period 3b Collateral Costs																					
3b.3.1	Decon equipment	878	-	-	-	-	-	-	132	1,010	1,010	-	-	-	-	-	-	-	-	-	-
3b.3.2	Pipe cutting equipment	-	957	-	-	-	-	-	143	1,100	1,100	-	-	-	-	-	-	-	-	-	-
3b.3	Subtotal Period 3b Collateral Costs	878	957	-	-	-	-	-	275	2,110	2,110	-	-	-	-	-	-	-	-	-	-

Table D-2
McGuire Nuclear Station - Unit 2
SAFSTOR Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 3b Period-Dependent Costs																					
3b.4.1	Decon supplies	27	-	-	-	-	-	-	7	34	34	-	-	-	-	-	-	-	-	-	-
3b.4.2	Insurance	-	-	-	-	-	-	240	24	264	264	-	-	-	-	-	-	-	-	-	-
3b.4.3	Property taxes	-	-	-	-	-	-	1	0	1	1	-	-	-	-	-	-	-	-	-	-
3b.4.4	Health physics supplies	-	199	-	-	-	-	-	50	249	249	-	-	-	-	-	-	-	-	-	-
3b.4.5	Heavy equipment rental	-	231	-	-	-	-	-	35	265	265	-	-	-	-	-	-	-	-	-	-
3b.4.6	Disposal of DAW generated	-	-	4	1	-	11	-	3	19	19	-	-	-	262	-	-	-	5,242	10	-
3b.4.7	Plant energy budget	-	-	-	-	-	-	798	120	918	918	-	-	-	-	-	-	-	-	-	-
3b.4.8	NRC Fees	-	-	-	-	-	-	107	11	118	118	-	-	-	-	-	-	-	-	-	-
3b.4.9	Indirect Overhead	-	-	-	-	-	-	845	127	972	972	-	-	-	-	-	-	-	-	-	-
3b.4.10	Security Staff Cost	-	-	-	-	-	-	597	90	686	686	-	-	-	-	-	-	-	-	-	17,913
3b.4.11	Utility Staff Cost	-	-	-	-	-	-	7,559	1,134	8,693	8,693	-	-	-	-	-	-	-	-	-	136,989
3b.4	Subtotal Period 3b Period-Dependent Costs	27	430	4	1	-	11	10,148	1,599	12,220	12,220	-	-	-	262	-	-	-	5,242	10	154,902
3b.0	TOTAL PERIOD 3b COST	905	1,386	4	1	-	11	11,417	2,065	15,789	15,506	-	283	-	262	-	-	-	5,242	10	168,766
PERIOD 3 TOTALS		905	2,218	13	2	-	31	34,619	5,869	43,658	43,215	-	442	-	743	-	-	-	14,855	8,194	439,342
PERIOD 4a - Large Component Removal																					
Period 4a Direct Decommissioning Activities																					
Nuclear Steam Supply System Removal																					
4a.1.1.1	Reactor Coolant Piping	37	172	21	21	155	165	-	131	703	703	-	-	625	625	-	-	-	144,980	5,128	-
4a.1.1.2	Pressurizer Relief Tank	5	18	6	6	41	40	-	24	139	139	-	-	165	165	-	-	-	36,553	584	-
4a.1.1.3	Reactor Coolant Pumps & Motors	15	69	39	153	143	1,210	-	376	2,006	2,006	-	-	272	4,708	-	-	-	888,360	3,464	-
4a.1.1.4	Pressurizer	7	45	351	334	-	992	-	348	2,078	2,078	-	-	-	3,860	-	-	-	240,508	1,824	-
4a.1.1.5	Steam Generators	287	2,606	2,654	3,023	2,302	4,777	-	3,054	18,704	18,704	-	-	21,655	18,589	-	-	-	3,569,235	23,227	3,750
4a.1.1.6	CRDMs/ICIs/Service Structure Removal	23	65	196	53	33	114	-	89	572	572	-	-	401	2,898	-	-	-	66,939	2,016	-
4a.1.1.7	Reactor Vessel Internals	86	1,928	4,773	1,105	-	2,836	193	4,405	15,325	15,325	-	-	-	3,618	125	470	-	342,705	23,700	1,080
4a.1.1.8	Vessel & Internals GTCC Disposal	-	-	-	-	-	14,761	-	2,214	16,975	16,975	-	-	-	-	-	-	666	129,800	-	-
4a.1.1.9	Reactor Vessel	-	3,856	1,164	434	-	3,470	193	5,056	14,173	14,173	-	-	-	6,290	2,955	-	-	943,207	23,700	1,080
4a.1.1	Totals	460	8,759	9,204	5,129	2,675	28,365	386	15,697	70,676	70,676	-	-	23,118	40,753	3,080	470	666	6,362,288	83,642	5,910
Removal of Major Equipment																					
4a.1.2	Main Turbine/Generator	-	320	315	23	882	478	-	367	2,385	2,385	-	-	4,633	2,580	-	-	-	625,275	7,961	-
4a.1.3	Main Condensers	-	992	163	81	733	419	-	491	2,880	2,880	-	-	7,274	2,145	-	-	-	519,770	25,357	-
Cascading Costs from Clean Building Demolition																					
4a.1.4.1	Reactor Building	-	477	-	-	-	-	-	72	548	548	-	-	-	-	-	-	-	-	7,048	-
4a.1.4.2	AB - Aux FW Pump/Pntrtn Rm/Swtchgr Rm	-	55	-	-	-	-	-	8	63	63	-	-	-	-	-	-	-	-	747	-
4a.1.4.3	AB - Cable & Battery Rooms(common)	-	20	-	-	-	-	-	3	22	22	-	-	-	-	-	-	-	-	274	-
4a.1.4.4	AB - Cont.Material Handling Area(common)	-	38	-	-	-	-	-	6	44	44	-	-	-	-	-	-	-	-	688	-
4a.1.4.5	AB - Hot Mach Shop/Lab Area(common)	-	50	-	-	-	-	-	7	57	57	-	-	-	-	-	-	-	-	839	-
4a.1.4.6	Auxiliary Building	-	182	-	-	-	-	-	27	210	210	-	-	-	-	-	-	-	-	2,609	-
4a.1.4.7	Equipment Staging Building(common)	-	20	-	-	-	-	-	3	24	24	-	-	-	-	-	-	-	-	266	-
4a.1.4.8	Fuel Building	-	55	-	-	-	-	-	8	64	64	-	-	-	-	-	-	-	-	790	-
4a.1.4.9	Main Steam Doghouse	-	48	-	-	-	-	-	7	55	55	-	-	-	-	-	-	-	-	603	-
4a.1.4.10	Radwaste Facility(common)	-	14	-	-	-	-	-	2	17	17	-	-	-	-	-	-	-	-	241	-
4a.1.4.11	Service Building(common)	-	133	-	-	-	-	-	20	153	153	-	-	-	-	-	-	-	-	1,946	-
4a.1.4.12	Waste Solidification Building(common)	-	8	-	-	-	-	-	1	9	9	-	-	-	-	-	-	-	-	101	-
4a.1.4	Totals	-	1,100	-	-	-	-	-	165	1,265	1,265	-	-	-	-	-	-	-	-	16,153	-
Disposal of Plant Systems																					
4a.1.5.1	Auxiliary Feedwater	-	299	15	26	1,010	-	-	232	1,581	1,581	-	-	11,098	-	-	-	-	450,698	7,393	-
4a.1.5.2	Auxiliary Fuel Oil	-	3	-	-	-	-	-	0	3	-	-	3	-	-	-	-	-	-	83	-
4a.1.5.3	Auxiliary Steam	-	35	-	-	-	-	-	5	40	-	-	40	-	-	-	-	-	-	1,039	-

Table D-2
McGuire Nuclear Station - Unit 2
SAFSTOR Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Disposal of Plant Systems (continued)																					
4a.1.5.4	Auxiliary Steam RCA	-	89	1	2	83	-	-	35	210	210	-	-	908	-	-	-	-	36,891	2,145	-
4a.1.5.5	Cond Circ Water Intake Screen Bkwash	-	3	-	-	-	-	-	0	3	-	-	3	-	-	-	-	-	-	77	-
4a.1.5.6	Condensate	-	374	-	-	-	-	-	56	430	-	-	430	-	-	-	-	-	-	11,186	-
4a.1.5.7	Condensate Storage	-	86	-	-	-	-	-	13	99	-	-	99	-	-	-	-	-	-	2,338	-
4a.1.5.8	Condenser Circulating Water	-	131	-	-	-	-	-	20	150	-	-	150	-	-	-	-	-	-	3,983	-
4a.1.5.9	Condenser Cleaning	-	18	-	-	-	-	-	3	21	-	-	21	-	-	-	-	-	-	561	-
4a.1.5.10	Condenser Steam Air Injector	-	54	-	-	-	-	-	8	62	-	-	62	-	-	-	-	-	-	1,691	-
4a.1.5.11	Containment Spray	-	125	3	5	200	-	-	62	396	396	-	-	2,203	-	-	-	-	89,459	3,007	-
4a.1.5.12	Conventional Chemical Addition	-	10	-	-	-	-	-	1	11	-	-	11	-	-	-	-	-	-	302	-
4a.1.5.13	Conventional Chemical Addition RCA	-	19	0	0	15	-	-	7	42	42	-	-	167	-	-	-	-	6,783	405	-
4a.1.5.14	Conventional LP Service Water	-	51	-	-	-	-	-	8	58	-	-	58	-	-	-	-	-	-	1,591	-
4a.1.5.15	DG Engine Air Intake & Exhaust	-	2	-	-	-	-	-	0	2	-	-	2	-	-	-	-	-	-	57	-
4a.1.5.16	DG Engine Cooling Water	-	26	-	-	-	-	-	4	30	-	-	30	-	-	-	-	-	-	775	-
4a.1.5.17	DG Engine Crankcase Vacuum	-	2	-	-	-	-	-	0	2	-	-	2	-	-	-	-	-	-	58	-
4a.1.5.18	DG Engine Fuel Oil	-	45	-	-	-	-	-	7	52	-	-	52	-	-	-	-	-	-	1,322	-
4a.1.5.19	DG Engine Lube Oil	-	38	-	-	-	-	-	6	44	-	-	44	-	-	-	-	-	-	1,155	-
4a.1.5.20	DG Engine Starting Air	-	24	-	-	-	-	-	4	28	-	-	28	-	-	-	-	-	-	755	-
4a.1.5.21	DG Room Sump Pump	-	17	-	-	-	-	-	2	19	-	-	19	-	-	-	-	-	-	483	-
4a.1.5.22	Environ Water Qual Monitor (shared)	-	3	-	-	-	-	-	0	4	-	-	4	-	-	-	-	-	-	102	-
4a.1.5.23	FW Lube & Hydraulic Oil	-	20	-	-	-	-	-	3	23	-	-	23	-	-	-	-	-	-	610	-
4a.1.5.24	FW Pump Turbine Steam Seal	-	5	-	-	-	-	-	1	6	-	-	6	-	-	-	-	-	-	154	-
4a.1.5.25	Feedwater	-	198	-	-	-	-	-	30	228	-	-	228	-	-	-	-	-	-	5,612	-
4a.1.5.26	Feedwater Pump Condensate Seal	-	22	-	-	-	-	-	3	25	-	-	25	-	-	-	-	-	-	681	-
4a.1.5.27	Feedwater RCA	-	88	4	6	244	-	-	60	402	402	-	-	2,686	-	-	-	-	109,061	2,169	-
4a.1.5.28	Generator Hydrogen	-	15	-	-	-	-	-	2	17	-	-	17	-	-	-	-	-	-	459	-
4a.1.5.29	Generator Seal Oil	-	8	-	-	-	-	-	1	9	-	-	9	-	-	-	-	-	-	254	-
4a.1.5.30	Generator Stator Cooling Water	-	18	-	-	-	-	-	3	21	-	-	21	-	-	-	-	-	-	539	-
4a.1.5.31	H2 Blanket & Bulk Storage (shared)	-	15	-	-	-	-	-	2	17	-	-	17	-	-	-	-	-	-	482	-
4a.1.5.32	Heater Bleed Steam	-	76	-	-	-	-	-	11	87	-	-	87	-	-	-	-	-	-	2,363	-
4a.1.5.33	Heater Drains	-	203	-	-	-	-	-	30	233	-	-	233	-	-	-	-	-	-	6,141	-
4a.1.5.34	Heater Relief Valve	-	16	-	-	-	-	-	2	18	-	-	18	-	-	-	-	-	-	480	-
4a.1.5.35	Heater Vent	-	32	-	-	-	-	-	5	37	-	-	37	-	-	-	-	-	-	1,064	-
4a.1.5.36	MS Reheater Bleed Steam	-	32	-	-	-	-	-	5	36	-	-	36	-	-	-	-	-	-	1,005	-
4a.1.5.37	MS Steam Vent to Atmosphere	-	130	3	6	226	-	-	68	433	433	-	-	2,486	-	-	-	-	100,976	3,215	-
4a.1.5.38	Main Steam	-	18	-	-	-	-	-	3	20	-	-	20	-	-	-	-	-	-	554	-
4a.1.5.39	Main Steam Bypass to Condenser	-	33	-	-	-	-	-	5	38	-	-	38	-	-	-	-	-	-	1,001	-
4a.1.5.40	Main Steam RCA	-	31	1	2	59	-	-	17	109	109	-	-	647	-	-	-	-	26,288	729	-
4a.1.5.41	Main Turbine LO & Purification	-	81	-	-	-	-	-	12	93	-	-	93	-	-	-	-	-	-	2,379	-
4a.1.5.42	Main Turbine Leakoff & Steam Seal	-	29	-	-	-	-	-	4	33	-	-	33	-	-	-	-	-	-	836	-
4a.1.5.43	Main Vacuum (Shared)	-	10	-	-	-	-	-	2	12	-	-	12	-	-	-	-	-	-	315	-
4a.1.5.44	Makeup Demineralized Water (shared)	-	133	-	-	-	-	-	20	153	-	-	153	-	-	-	-	-	-	4,175	-
4a.1.5.45	Misc Embeded Piping (shared)	-	7	-	-	-	-	-	1	8	-	-	8	-	-	-	-	-	-	223	-
4a.1.5.46	Miscellaneous Equipment	-	2	-	-	-	-	-	0	2	-	-	2	-	-	-	-	-	-	55	-
4a.1.5.47	Moisture Separator Reheater Drain	-	153	-	-	-	-	-	23	175	-	-	175	-	-	-	-	-	-	4,685	-
4a.1.5.48	Nitrogen (shared)	-	21	-	-	-	-	-	3	24	-	-	24	-	-	-	-	-	-	660	-
4a.1.5.49	Recirculating Cooling Water (shared)	-	170	-	-	-	-	-	26	196	-	-	196	-	-	-	-	-	-	5,352	-
4a.1.5.50	SG Blowdown Recycle	-	276	4	7	263	-	-	110	659	659	-	-	2,887	-	-	-	-	117,232	6,817	-
4a.1.5.51	SG Wet Layup Recirculation	-	19	0	0	16	-	-	7	43	43	-	-	179	-	-	-	-	7,272	412	-
4a.1.5.52	SM Supply to Aux Equipment	-	13	-	-	-	-	-	2	15	-	-	15	-	-	-	-	-	-	390	-
4a.1.5.53	SM Supply to Aux Equipment RCA	-	3	0	0	5	-	-	2	10	10	-	-	50	-	-	-	-	2,049	82	-
4a.1.5.54	Standby Shutdown Diesel (shared)	-	21	-	-	-	-	-	3	24	-	-	24	-	-	-	-	-	-	567	-
4a.1.5.55	Steam Supply to FW Pump Turbine	-	6	-	-	-	-	-	1	7	-	-	7	-	-	-	-	-	-	189	-
4a.1.5.56	Turbine Crossover	-	95	-	-	-	-	-	14	109	-	-	109	-	-	-	-	-	-	2,632	-
4a.1.5.57	Turbine Exhaust	-	1	-	-	-	-	-	0	1	-	-	1	-	-	-	-	-	-	26	-
4a.1.5.58	Turbine Hydraulic Oil	-	69	-	-	-	-	-	10	79	-	-	79	-	-	-	-	-	-	2,043	-
4a.1.5.59	Vacuum Priming (shared)	-	79	-	-	-	-	-	12	91	-	-	91	-	-	-	-	-	-	2,478	-

Table D-2
McGuire Nuclear Station - Unit 2
SAFSTOR Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Disposal of Plant Systems (continued)																					
4a.1.5.60	Waste Oil Storage (shared)	-	13	-	-	-	-	-	2	15	-	-	15	-	-	-	-	-	-	399	-
4a.1.5	Totals	-	3,610	31	56	2,121	-	-	979	6,797	3,885	-	2,911	23,312	-	-	-	-	946,708	102,737	-
4a.1.6	Scaffolding in support of decommissioning	-	740	11	3	59	7	-	197	1,016	1,016	-	-	582	36	-	-	-	29,428	23,726	-
4a.1	Subtotal Period 4a Activity Costs	460	15,522	9,724	5,291	6,470	29,270	386	17,896	85,019	82,107	-	2,911	58,919	45,514	3,080	470	666	8,483,469	259,575	5,910
Period 4a Collateral Costs																					
4a.3.1	Process liquid waste	19	-	9	57	-	39	-	28	151	151	-	-	-	148	-	-	-	8,879	29	-
4a.3.2	Small tool allowance	-	188	-	-	-	-	-	28	216	195	-	22	-	-	-	-	-	-	-	-
4a.3.3	Survey and Release of Scrap Metal	-	-	-	-	-	-	74	11	85	85	-	-	-	-	-	-	-	-	-	-
4a.3	Subtotal Period 4a Collateral Costs	19	188	9	57	-	39	74	68	453	431	-	22	-	148	-	-	-	8,879	29	-
Period 4a Period-Dependent Costs																					
4a.4.1	Decon supplies	55	-	-	-	-	-	-	14	68	68	-	-	-	-	-	-	-	-	-	-
4a.4.2	Insurance	-	-	-	-	-	-	486	49	535	535	-	-	-	-	-	-	-	-	-	-
4a.4.3	Property taxes	-	-	-	-	-	-	2	0	2	2	-	0	-	-	-	-	-	-	-	-
4a.4.4	Health physics supplies	-	1,516	-	-	-	-	-	379	1,895	1,895	-	-	-	-	-	-	-	-	-	-
4a.4.5	Heavy equipment rental	-	2,248	-	-	-	-	-	337	2,585	2,585	-	-	-	-	-	-	-	-	-	-
4a.4.6	Disposal of DAW generated	-	-	53	8	-	131	-	39	232	232	-	-	-	3,119	-	-	-	62,376	114	-
4a.4.7	Plant energy budget	-	-	-	-	-	-	1,538	231	1,768	1,768	-	-	-	-	-	-	-	-	-	-
4a.4.8	NRC Fees	-	-	-	-	-	-	458	46	504	504	-	-	-	-	-	-	-	-	-	-
4a.4.9	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	381	57	438	438	-	-	-	-	-	-	-	-	-	-
4a.4.10	Indirect Overhead	-	-	-	-	-	-	2,315	347	2,663	2,663	-	-	-	-	-	-	-	-	-	-
4a.4.11	Security Staff Cost	-	-	-	-	-	-	1,419	213	1,632	1,632	-	-	-	-	-	-	-	-	-	44,520
4a.4.12	Utility Staff Cost	-	-	-	-	-	-	21,069	3,160	24,230	24,230	-	-	-	-	-	-	-	-	-	375,240
4a.4	Subtotal Period 4a Period-Dependent Costs	55	3,764	53	8	-	131	27,668	4,872	36,551	36,551	-	0	-	3,119	-	-	-	62,376	114	419,760
4a.0	TOTAL PERIOD 4a COST	533	19,474	9,786	5,356	6,470	29,440	28,129	22,836	122,023	119,089	-	2,933	58,919	48,781	3,080	470	666	8,554,724	259,718	425,670
PERIOD 4b - Site Decontamination																					
Period 4b Direct Decommissioning Activities																					
4b.1.1	Remove spent fuel racks	311	36	137	79	-	534	-	324	1,420	1,420	-	-	-	2,732	-	-	-	245,101	1,066	-
Disposal of Plant Systems																					
4b.1.2.1	Admin Bldg Ventilation (shared)	-	9	-	-	-	-	-	1	10	-	-	10	-	-	-	-	-	-	267	-
4b.1.2.2	Annullus Ventilation	-	24	0	0	17	-	-	9	50	50	-	-	187	-	-	-	-	7,600	616	-
4b.1.2.3	Aux & RB Heating Water	-	328	5	9	339	-	-	135	815	815	-	-	3,726	-	-	-	-	151,327	7,576	-
4b.1.2.4	Auxiliary Building Ventilation	-	152	3	6	217	-	-	72	450	450	-	-	2,384	-	-	-	-	96,830	3,338	-
4b.1.2.5	Boron Recycle	-	277	17	22	231	112	-	137	796	796	-	-	2,540	587	-	-	-	154,333	6,842	-
4b.1.2.6	Boron Thermal Regeneration	-	238	13	18	114	103	-	106	592	592	-	-	1,248	527	-	-	-	97,908	5,914	-
4b.1.2.7	Breathing Air (shared)	-	18	0	0	15	-	-	7	40	40	-	-	160	-	-	-	-	6,499	486	-
4b.1.2.8	CRD Ventilation	-	69	1	1	52	-	-	25	148	148	-	-	570	-	-	-	-	23,165	1,558	-
4b.1.2.9	Chemical Volume & Control	-	650	52	64	227	395	-	310	1,699	1,699	-	-	2,500	2,075	-	-	-	282,810	16,105	-
4b.1.2.10	Component Cooling	-	106	-	-	-	-	-	16	122	-	-	122	-	-	-	-	-	-	3,267	-
4b.1.2.11	Component Cooling RCA	-	187	4	8	295	-	-	93	587	587	-	-	3,244	-	-	-	-	131,753	4,502	-
4b.1.2.12	Cont Air Release & Addition	-	30	0	1	21	-	-	11	62	62	-	-	226	-	-	-	-	9,187	762	-
4b.1.2.13	Cont Air Return Ex & H2 Skimmer	-	98	1	3	97	-	-	40	238	238	-	-	1,065	-	-	-	-	43,247	2,463	-
4b.1.2.14	Cont Lower Compartment Vent	-	25	1	1	48	-	-	14	89	89	-	-	532	-	-	-	-	21,598	622	-
4b.1.2.15	Cont Upper Compartment Vent	-	8	0	0	8	-	-	3	20	20	-	-	93	-	-	-	-	3,768	181	-
4b.1.2.16	Cont Vent Cooling Water (shared)	-	770	14	25	954	-	-	341	2,104	2,104	-	-	10,482	-	-	-	-	425,692	18,817	-
4b.1.2.17	Containment Purge Ventilation	-	90	5	8	321	-	-	72	496	496	-	-	3,532	-	-	-	-	143,439	2,344	-
4b.1.2.18	Control Area Ventilation	-	34	1	2	80	-	-	21	137	137	-	-	875	-	-	-	-	35,522	826	-
4b.1.2.19	Controlled Area Chilled Water (shared)	-	504	7	13	507	-	-	205	1,236	1,236	-	-	5,569	-	-	-	-	226,144	12,179	-
4b.1.2.20	Conventional Sampling	-	225	16	15	45	93	-	90	483	483	-	-	495	476	-	-	-	62,680	5,622	-

Table D-2
McGuire Nuclear Station - Unit 2
SAFSTOR Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Disposal of Plant Systems (continued)																					
4b.1.2.21	Conventional Waste Water Treat (shared)	-	44	-	-	-	-	-	7	51	-	-	51	-	-	-	-	-	-	1,320	-
4b.1.2.22	Convntl Waste Water Treat (shared)RCA	-	135	3	5	203	-	-	65	412	412	-	-	2,230	-	-	-	-	90,563	3,268	-
4b.1.2.23	Diesel Building Ventilation	-	3	-	-	-	-	-	1	4	-	-	4	-	-	-	-	-	-	102	-
4b.1.2.24	Drinking Water (shared)	-	262	-	-	-	-	-	39	302	-	-	302	-	-	-	-	-	-	8,371	-
4b.1.2.25	Electrical (clean)	-	2,628	-	-	-	-	-	394	3,023	-	-	3,023	-	-	-	-	-	-	73,972	-
4b.1.2.26	Electrical (contaminated)	-	765	13	24	688	39	-	309	1,838	1,838	-	-	7,563	201	-	-	-	325,208	18,809	-
4b.1.2.27	Electrical (contaminated) RCA	-	5,367	96	170	6,505	-	-	2,353	14,490	14,490	-	-	71,504	-	-	-	-	2,903,830	129,195	-
4b.1.2.28	Equipment Decon	-	30	0	1	24	-	-	11	66	66	-	-	260	-	-	-	-	10,557	713	-
4b.1.2.29	FHB Ventilation	-	35	1	1	50	-	-	17	104	104	-	-	550	-	-	-	-	22,331	767	-
4b.1.2.30	Filtered Water (shared)	-	61	-	-	-	-	-	9	70	-	-	70	-	-	-	-	-	-	1,712	-
4b.1.2.31	Filtered Water (shared) RCA	-	20	0	1	23	-	-	8	52	52	-	-	251	-	-	-	-	10,197	468	-
4b.1.2.32	Fire Protection	-	116	-	-	-	-	-	17	134	-	-	134	-	-	-	-	-	-	3,625	-
4b.1.2.33	Fire Protection (shared)	-	128	-	-	-	-	-	19	147	-	-	147	-	-	-	-	-	-	3,910	-
4b.1.2.34	Fire Protection RCA	-	360	7	13	503	-	-	168	1,052	1,052	-	-	5,527	-	-	-	-	224,455	8,906	-
4b.1.2.35	Groundwater Drainage	-	12	-	-	-	-	-	2	14	-	-	14	-	-	-	-	-	-	390	-
4b.1.2.36	Heating Boiler Feedwater (shared)	-	76	-	-	-	-	-	11	87	-	-	87	-	-	-	-	-	-	2,205	-
4b.1.2.37	Heating Boiler Fuel Gas	-	1	-	-	-	-	-	0	1	-	-	1	-	-	-	-	-	-	41	-
4b.1.2.38	ICI Room Ventilation	-	2	0	0	3	-	-	1	6	6	-	-	30	-	-	-	-	1,231	54	-
4b.1.2.39	Ice Condenser Refrigeration	-	701	12	21	814	-	-	302	1,849	1,849	-	-	8,944	-	-	-	-	363,215	16,968	-
4b.1.2.40	Incore Instrumentation Piping	-	29	1	1	-	5	-	9	45	45	-	-	-	26	-	-	-	2,337	812	-
4b.1.2.41	Instrument Air	-	221	-	-	-	-	-	33	254	-	-	254	-	-	-	-	-	-	7,048	-
4b.1.2.42	Instrument Air RCA	-	695	9	15	581	-	-	264	1,564	1,564	-	-	6,385	-	-	-	-	259,314	17,145	-
4b.1.2.43	Liquid Monitor & Disposal (shared)	-	372	32	38	160	229	-	183	1,014	1,014	-	-	1,764	1,229	-	-	-	176,665	9,088	-
4b.1.2.44	Liquid Waste Recycle	-	372	29	34	91	212	-	168	906	906	-	-	1,002	1,096	-	-	-	138,132	9,063	-
4b.1.2.45	Misc Service Bldg HVAC (shared)	-	18	-	-	-	-	-	3	20	-	-	20	-	-	-	-	-	-	519	-
4b.1.2.46	Miscellaneous Ventilation	-	12	-	-	-	-	-	2	13	-	-	13	-	-	-	-	-	-	381	-
4b.1.2.47	Nuclear Fuel Handling	-	43	6	9	95	42	-	37	232	232	-	-	1,047	215	-	-	-	61,797	1,047	-
4b.1.2.48	Nuclear Sampling	-	247	16	15	38	95	-	95	506	506	-	-	418	488	-	-	-	60,668	6,179	-
4b.1.2.49	Nuclear Service Water	-	52	-	-	-	-	-	8	59	-	-	59	-	-	-	-	-	-	1,557	-
4b.1.2.50	Nuclear Service Water RCA	-	349	11	19	712	-	-	198	1,289	1,289	-	-	7,831	-	-	-	-	318,028	8,427	-
4b.1.2.51	Nuclear Solid Waste Disposal (shared)	-	224	18	22	110	128	-	110	611	611	-	-	1,210	704	-	-	-	107,766	5,519	-
4b.1.2.52	Onsite Tech Support Center HVAC (shared)	-	6	-	-	-	-	-	1	7	-	-	7	-	-	-	-	-	-	189	-
4b.1.2.53	Oxygen (shared)	-	3	-	-	-	-	-	0	3	-	-	3	-	-	-	-	-	-	92	-
4b.1.2.54	Reactor Coolant	-	127	9	11	62	66	-	60	336	336	-	-	679	337	-	-	-	57,733	3,313	-
4b.1.2.55	Refueling Water	-	298	7	13	513	-	-	154	986	986	-	-	5,639	-	-	-	-	228,990	7,461	-
4b.1.2.56	Residual Heat Removal	-	147	19	26	82	165	-	96	535	535	-	-	899	842	-	-	-	112,042	3,656	-
4b.1.2.57	Safety Injection	-	395	30	41	466	196	-	227	1,354	1,354	-	-	5,124	1,022	-	-	-	297,794	9,677	-
4b.1.2.58	Sanitation & Waste Treatment (shared)	-	11	-	-	-	-	-	2	13	-	-	13	-	-	-	-	-	-	354	-
4b.1.2.59	Spent Fuel Cooling	-	204	12	17	136	92	-	98	558	558	-	-	1,490	469	-	-	-	102,582	5,099	-
4b.1.2.60	Station Air (shared)	-	46	-	-	-	-	-	7	53	-	-	53	-	-	-	-	-	-	1,455	-
4b.1.2.61	Station Air (shared) RCA	-	528	6	11	417	-	-	197	1,159	1,159	-	-	4,581	-	-	-	-	186,048	12,934	-
4b.1.2.62	Turbine Building HVAC	-	114	-	-	-	-	-	17	131	-	-	131	-	-	-	-	-	-	3,772	-
4b.1.2.63	Turbine Room Sump (shared)	-	40	-	-	-	-	-	6	46	-	-	46	-	-	-	-	-	-	1,248	-
4b.1.2.64	Unwatering Pump	-	14	-	-	-	-	-	2	17	-	-	17	-	-	-	-	-	-	445	-
4b.1.2.65	Waste Gas (shared)	-	214	15	17	188	79	-	105	618	618	-	-	2,066	421	-	-	-	120,221	5,119	-
4b.1.2	Totals	-	19,371	492	722	16,049	2,050	-	7,522	46,206	41,624	-	4,582	176,424	10,715	-	-	-	8,105,205	490,683	-
4b.1.3	Scaffolding in support of decommissioning	-	1,110	16	4	88	11	-	296	1,524	1,524	-	-	873	54	-	-	-	44,142	35,588	-
Decontamination of Site Buildings																					
4b.1.4.1	Reactor Building	850	604	143	219	754	777	-	930	4,277	4,277	-	-	8,285	8,105	-	-	-	899,321	33,670	-
4b.1.4.2	AB - Cont.Material Handling Area(common)	115	47	10	15	18	21	-	81	308	308	-	-	202	578	-	-	-	47,839	3,925	-
4b.1.4.3	AB - Hot Mach Shop/Lab Area(common)	43	22	4	7	26	9	-	35	146	146	-	-	288	240	-	-	-	27,892	1,555	-
4b.1.4.4	Auxiliary Building	224	139	38	59	73	81	-	190	805	805	-	-	806	2,215	-	-	-	184,719	8,416	-
4b.1.4.5	Equipment Staging Building(common)	11	25	2	3	48	4	-	21	113	113	-	-	525	65	-	-	-	25,737	795	-
4b.1.4.6	Fuel Building	535	597	14	20	276	31	-	470	1,943	1,943	-	-	3,035	539	-	-	-	160,564	26,656	-

Table D-2
McGuire Nuclear Station - Unit 2
SAFSTOR Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt, Lbs.	Craft Manhours	Utility and Contractor Manhours
Decontamination of Site Buildings (continued)																					
4b.1.4.7	Radwaste Facility(common)	1	5	2	3	1	4	-	3	18	18	-	-	6	106	-	-	-	7,555	101	-
4b.1.4.8	Retired Steam Gen.Storage Facility(com)	59	7	2	3	-	4	-	33	107	107	-	-	-	101	-	-	-	6,947	1,664	-
4b.1.4.9	Waste Solidification Building(common)	2	6	0	0	10	1	-	4	23	23	-	-	114	7	-	-	-	4,906	183	-
4b.1.4	Totals	1,840	1,450	216	329	1,206	932	-	1,767	7,740	7,740	-	-	13,261	11,955	-	-	-	1,365,479	76,964	-
4b.1	Subtotal Period 4b Activity Costs	2,151	21,967	861	1,134	17,343	3,527	-	9,908	56,890	52,308	-	4,582	190,557	25,457	-	-	-	9,759,928	604,302	-
Period 4b Additional Costs																					
4b.2.1	Scaffold Storage Tent Asphalt Disposal	-	7	2	66	-	193	-	60	328	328	-	-	-	3,375	-	-	-	405,000	165	-
4b.2.2	Pond Closures	-	-	-	-	-	-	348	52	400	-	-	400	-	-	-	-	-	-	-	-
4b.2.3	License Termination Survey Program Management	-	-	-	-	-	-	616	185	801	801	-	-	-	-	-	-	-	-	-	6,240
4b.2.4	ISFSI License Termination	-	771	3	269	-	357	1,253	510	3,163	-	3,163	-	-	6,961	-	-	-	961,714	16,599	-
4b.2	Subtotal Period 4b Additional Costs	-	778	5	335	-	549	2,217	808	4,692	1,129	3,163	400	-	10,336	-	-	-	1,366,714	16,764	6,240
Period 4b Collateral Costs																					
4b.3.1	Process liquid waste	66	-	31	204	-	138	-	101	541	541	-	-	-	530	-	-	-	31,814	103	-
4b.3.2	Small tool allowance	-	427	-	-	-	-	-	64	491	491	-	-	-	-	-	-	-	-	-	-
4b.3.3	Decommissioning Equipment Disposition	-	-	109	30	605	73	-	124	942	942	-	-	6,000	373	-	-	-	303,507	88	-
4b.3.4	Survey and Release of Scrap Metal	-	-	-	-	-	-	111	17	128	128	-	-	-	-	-	-	-	-	-	-
4b.3	Subtotal Period 4b Collateral Costs	66	427	141	234	605	211	111	307	2,102	2,102	-	-	6,000	904	-	-	-	335,320	192	-
Period 4b Period-Dependent Costs																					
4b.4.1	Decon supplies	806	-	-	-	-	-	-	202	1,008	1,008	-	-	-	-	-	-	-	-	-	-
4b.4.2	Insurance	-	-	-	-	-	-	699	70	768	768	-	-	-	-	-	-	-	-	-	-
4b.4.3	Property taxes	-	-	-	-	-	-	2	0	2	2	-	-	-	-	-	-	-	-	-	-
4b.4.4	Health physics supplies	-	3,196	-	-	-	-	-	799	3,995	3,995	-	-	-	-	-	-	-	-	-	-
4b.4.5	Heavy equipment rental	-	3,206	-	-	-	-	-	481	3,687	3,687	-	-	-	-	-	-	-	-	-	-
4b.4.6	Disposal of DAW generated	-	-	127	20	-	316	-	95	558	558	-	-	-	7,504	-	-	-	150,085	273	-
4b.4.7	Plant energy budget	-	-	-	-	-	-	1,744	262	2,005	2,005	-	-	-	-	-	-	-	-	-	-
4b.4.8	NRC Fees	-	-	-	-	-	-	658	66	724	724	-	-	-	-	-	-	-	-	-	-
4b.4.9	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	548	82	630	630	-	-	-	-	-	-	-	-	-	-
4b.4.10	Indirect Overhead	-	-	-	-	-	-	3,270	490	3,760	3,760	-	-	-	-	-	-	-	-	-	-
4b.4.11	Security Staff Cost	-	-	-	-	-	-	2,038	306	2,344	2,344	-	-	-	-	-	-	-	-	-	63,960
4b.4.12	Utility Staff Cost	-	-	-	-	-	-	30,344	4,552	34,896	34,896	-	-	-	-	-	-	-	-	-	529,954
4b.4	Subtotal Period 4b Period-Dependent Costs	806	6,402	127	20	-	316	39,303	7,404	54,378	54,378	-	-	-	7,504	-	-	-	150,085	273	593,914
4b.0	TOTAL PERIOD 4b COST	3,023	29,575	1,133	1,723	17,948	4,603	41,631	18,426	118,062	109,917	3,163	4,982	196,557	44,201	-	-	-	11,612,050	621,530	600,154
PERIOD 4e - License Termination																					
Period 4e Direct Decommissioning Activities																					
4e.1.1	ORISE confirmatory survey	-	-	-	-	-	-	150	45	195	195	-	-	-	-	-	-	-	-	-	-
4e.1.2	Terminate license									a											
4e.1	Subtotal Period 4e Activity Costs	-	-	-	-	-	-	150	45	195	195	-	-	-	-	-	-	-	-	-	-
Period 4e Additional Costs																					
4e.2.1	License Termination Survey	-	-	-	-	-	-	8,853	2,656	11,509	11,509	-	-	-	-	-	-	-	-	212,278	3,120
4e.2	Subtotal Period 4e Additional Costs	-	-	-	-	-	-	8,853	2,656	11,509	11,509	-	-	-	-	-	-	-	-	212,278	3,120
Period 4e Period-Dependent Costs																					
4e.4.1	Insurance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4e.4.2	Property taxes	-	-	-	-	-	-	1	0	1	1	-	-	-	-	-	-	-	-	-	-
4e.4.3	Health physics supplies	-	1,153	-	-	-	-	-	288	1,441	1,441	-	-	-	-	-	-	-	-	-	-
4e.4.4	Disposal of DAW generated	-	-	6	1	-	15	-	4	26	26	-	-	-	345	-	-	-	6,907	13	-
4e.4.5	Plant energy budget	-	-	-	-	-	-	240	36	276	276	-	-	-	-	-	-	-	-	-	-
4e.4.6	NRC Fees	-	-	-	-	-	-	355	35	390	390	-	-	-	-	-	-	-	-	-	-

Table D-2
McGuire Nuclear Station - Unit 2
SAFSTOR Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 4e Period-Dependent Costs (continued)																					
4e.4.7	Indirect Overhead	-	-	-	-	-	-	751	113	864	864	-	-	-	-	-	-	-	-	-	-
4e.4.8	Security Staff Cost	-	-	-	-	-	-	417	62	479	479	-	-	-	-	-	-	-	-	-	11,786
4e.4.9	Utility Staff Cost	-	-	-	-	-	-	7,607	1,141	8,748	8,748	-	-	-	-	-	-	-	-	-	121,786
4e.4	Subtotal Period 4e Period-Dependent Costs	-	1,153	6	1	-	15	9,371	1,680	12,225	12,225	-	-	-	345	-	-	-	6,907	13	133,571
4e.0	TOTAL PERIOD 4e COST	-	1,153	6	1	-	15	18,374	4,381	23,929	23,929	-	-	-	345	-	-	-	6,907	212,291	136,691
PERIOD 4 TOTALS		3,556	50,201	10,925	7,080	24,418	34,057	88,134	45,643	264,014	252,936	3,163	7,916	255,476	93,327	3,080	470	666	20,173,680	1,093,519	1,162,516
PERIOD 5b - Site Restoration																					
Period 5b Direct Decommissioning Activities																					
Demolition of Remaining Site Buildings																					
5b.1.1.1	Reactor Building	-	2,706	-	-	-	-	-	406	3,112	-	-	3,112	-	-	-	-	-	-	40,056	-
5b.1.1.2	AB - Aux FW Pump/Pntrtn Rm/Swtchgr Rm	-	494	-	-	-	-	-	74	568	-	-	568	-	-	-	-	-	-	6,724	-
5b.1.1.3	AB - Cable & Battery Rooms(common)	-	176	-	-	-	-	-	26	202	-	-	202	-	-	-	-	-	-	2,463	-
5b.1.1.4	AB - Cont.Material Handling Area(common)	-	350	-	-	-	-	-	53	403	-	-	403	-	-	-	-	-	-	6,320	-
5b.1.1.5	AB - Hot Mach Shop/Lab Area(common)	-	447	-	-	-	-	-	67	513	-	-	513	-	-	-	-	-	-	7,553	-
5b.1.1.6	AB - Office Addition(common)	-	3	-	-	-	-	-	1	4	-	-	4	-	-	-	-	-	-	93	-
5b.1.1.7	Auxiliary Building	-	1,642	-	-	-	-	-	246	1,888	-	-	1,888	-	-	-	-	-	-	23,480	-
5b.1.1.8	Diesel Generator Building	-	135	-	-	-	-	-	20	155	-	-	155	-	-	-	-	-	-	1,794	-
5b.1.1.9	Equipment Staging Building(common)	-	195	-	-	-	-	-	29	225	-	-	225	-	-	-	-	-	-	2,739	-
5b.1.1.10	Fuel Building	-	544	-	-	-	-	-	82	626	-	-	626	-	-	-	-	-	-	8,332	-
5b.1.1.11	Intake & Discharge Structures & Piping	-	1,563	-	-	-	-	-	234	1,797	-	-	1,797	-	-	-	-	-	-	24,110	-
5b.1.1.12	Low Level Intake Pump Struct.Piping(com)	-	510	-	-	-	-	-	77	587	-	-	587	-	-	-	-	-	-	8,644	-
5b.1.1.13	Main Steam Doghouse	-	430	-	-	-	-	-	64	494	-	-	494	-	-	-	-	-	-	5,450	-
5b.1.1.14	Miscellaneous Site Structures(common)	-	6,102	-	-	-	-	-	915	7,018	-	-	7,018	-	-	-	-	-	-	91,540	-
5b.1.1.15	Radwaste Facility(common)	-	130	-	-	-	-	-	19	149	-	-	149	-	-	-	-	-	-	2,171	-
5b.1.1.16	Retired Steam Gen.Storage Facility(com)	-	616	-	-	-	-	-	92	708	-	-	708	-	-	-	-	-	-	9,317	-
5b.1.1.17	Service Building(common)	-	1,294	-	-	-	-	-	194	1,488	-	-	1,488	-	-	-	-	-	-	20,666	-
5b.1.1.18	Settling and Holding Ponds(common)	-	15	-	-	-	-	-	2	17	-	-	17	-	-	-	-	-	-	230	-
5b.1.1.19	Standby Shutdown Facility(common)	-	69	-	-	-	-	-	10	79	-	-	79	-	-	-	-	-	-	1,308	-
5b.1.1.20	Turbine Building	-	2,891	-	-	-	-	-	434	3,324	-	-	3,324	-	-	-	-	-	-	51,809	-
5b.1.1.21	Turbine Pedestal	-	670	-	-	-	-	-	101	771	-	-	771	-	-	-	-	-	-	8,172	-
5b.1.1.22	Waste Solidification Building(common)	-	74	-	-	-	-	-	11	85	-	-	85	-	-	-	-	-	-	1,054	-
5b.1.1	Totals	-	21,055	-	-	-	-	-	3,158	24,213	-	-	24,213	-	-	-	-	-	-	324,024	-
Site Closeout Activities																					
5b.1.2	BackFill Site	-	3,894	-	-	-	-	-	584	4,478	-	-	4,478	-	-	-	-	-	-	14,298	-
5b.1.3	Grade & landscape site	-	174	-	-	-	-	-	26	200	-	-	200	-	-	-	-	-	-	428	-
5b.1.4	Final report to NRC	-	-	-	-	-	-	61	9	71	71	-	-	-	-	-	-	-	-	-	671
5b.1	Subtotal Period 5b Activity Costs	-	25,123	-	-	-	-	61	3,778	28,962	71	-	28,891	-	-	-	-	-	-	338,751	671
Period 5b Additional Costs																					
5b.2.1	Concrete Crushing	-	804	-	-	-	-	5	121	931	-	-	931	-	-	-	-	-	-	4,075	-
5b.2.2	ISFSI Demolition and Restoration	-	1,953	-	-	-	-	43	299	2,295	-	2,295	-	-	-	-	-	-	-	13,975	160
5b.2	Subtotal Period 5b Additional Costs	-	2,757	-	-	-	-	48	421	3,226	-	2,295	931	-	-	-	-	-	-	18,050	160
Period 5b Collateral Costs																					
5b.3.1	Small tool allowance	-	254	-	-	-	-	-	38	292	-	-	292	-	-	-	-	-	-	-	-
5b.3	Subtotal Period 5b Collateral Costs	-	254	-	-	-	-	-	38	292	-	-	292	-	-	-	-	-	-	-	-
Period 5b Period-Dependent Costs																					
5b.4.1	Insurance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5b.4.2	Property taxes	-	-	-	-	-	-	3	0	3	-	-	3	-	-	-	-	-	-	-	-

Table D-2
McGuire Nuclear Station - Unit 2
SAFSTOR Decommissioning Cost Estimate
(thousands of 2008 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes: Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 5b Period-Dependent Costs (continued)																					
5b.4.3	Heavy equipment rental	-	4,933	-	-	-	-	-	740	5,673	-	-	5,673	-	-	-	-	-	-	-	-
5b.4.4	Plant energy budget	-	-	-	-	-	-	267	40	307	-	-	307	-	-	-	-	-	-	-	-
5b.4.5	Indirect Overhead	-	-	-	-	-	-	820	123	943	943	-	-	-	-	-	-	-	-	-	-
5b.4.6	Security Staff Cost	-	-	-	-	-	-	849	127	976	-	-	976	-	-	-	-	-	-	-	23,186
5b.4.7	Utility Staff Cost	-	-	-	-	-	-	7,889	1,183	9,072	-	-	9,072	-	-	-	-	-	-	-	132,891
5b.4	Subtotal Period 5b Period-Dependent Costs	-	4,933	-	-	-	-	9,827	2,214	16,975	943	-	16,032	-	-	-	-	-	-	-	156,078
5b.0	TOTAL PERIOD 5b COST	-	33,067	-	-	-	-	9,937	6,450	49,454	1,014	2,295	46,146	-	-	-	-	-	-	356,801	156,908
PERIOD 5 TOTALS		-	33,067	-	-	-	-	9,937	6,450	49,454	1,014	2,295	46,146	-	-	-	-	-	-	356,801	156,908
TOTAL COST TO DECOMMISSION		8,278	91,766	11,398	7,798	24,531	35,400	364,799	94,579	638,550	496,307	85,929	56,314	255,652	116,445	3,080	470	666	20,723,040	1,524,235	4,661,496

TOTAL COST TO DECOMMISSION WITH 17.39% CONTINGENCY:	**$638,550**	**thousands of 2008 dollars**
TOTAL NRC LICENSE TERMINATION COST IS 77.72% OR:	**$496,307**	**thousands of 2008 dollars**
SPENT FUEL MANAGEMENT COST IS 13.46% OR:	**$85,929**	**thousands of 2008 dollars**
NON-NUCLEAR DEMOLITION COST IS 8.82% OR:	**$56,314**	**thousands of 2008 dollars**
TOTAL LOW-LEVEL RADIOACTIVE WASTE VOLUME BURIED (EXCLUDING GTCC):	**119,993**	**cubic feet**
TOTAL GREATER THAN CLASS C RADWASTE VOLUME GENERATED:	**666**	**cubic feet**
TOTAL SCRAP METAL REMOVED:	**57,819**	**tons**
TOTAL CRAFT LABOR REQUIREMENTS:	**1,513,508**	**man-hours**

End Notes:
n/a - indicates that this activity not charged as decommissioning expense.
a - indicates that this activity performed by decommissioning staff.
0 - indicates that this value is less than 0.5 but is non-zero.
a cell containing " - " indicates a zero value